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The JOURNAL of SPEECH DISORDERS

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A STUDY OF THE EFFICACY OF NEGATIVE PRACTICE AS A CORRECTIVE FOR STAMMERING

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The purpose of this investigation is to study the effectiveness of negative practice used as a corrective treatment for stammering. To avoid the confusion existing in the literature, the terms stammering and stuttering are to be used here synonomously, to designate intermittent and variable nervous disorders of speech, characterized by blockage or spasmotic contractions of the muscles concerned in speech, by rapid repetition of a word, or by repetition of the initial letter or syllable (2).

For the need of a necessary premise, stammering is considered here as a bad habit. The ordinary treatment of bad habits consists of substituting satisfactory habits by applying the laws of learning which operate in the acquisition of any habit.

Dunlap, however, contends that the conventional learning laws (law of exercise, etc.) do not apply to the breaking of bad habits, saying that a good habit is the goal of the training, not the technique. He has proposed the theory of negative practice (1). This theory may perhaps best be stated by saying that repetition can be used to break or dissolve a habit, providing the repetition is voluntary and accompanied by the conscious realization that the habit is undesirable and should be eliminated. Dunlap stresses, however, that the technique is adequate only against the habit as a habit, and will suffice only in those cases in which the original causes have ceased to operate.

MATERIALS

The materials used for testing were a psychology text, a children's reader, a popular magazine, and a stop-watch. The materials for testing were chosen with reference to the ability and interests of the stammerer.

The practice material consisted of lists of sentences made from words stammered in the tests. These practice sentences contained from two to seven words, with from one to four words underlined to be stammered.

SUBJECTS

CASE I. Male, 20 years old. Speech blockage. Superior intelligence. Good health. Speech characterized by a severe blockage, accompanied by a protrusion of the tongue and an increase in general tension. Also to a much smaller extent, repetition of words and repetition of the initial syllable or letter appear in his speech. For example, "I r————r———r—realize I c————c—can't do it."

CASE II. Male, 13 years old. Repetition of initial letters or syllables. Normal intelligence. Good health. Has been a behavior problem and a reading disability case. Speech characterized by rapid repetition of words and repetition of initial letters and syllables. For example, "An-an-an-and I-I-I will do i-i-it."

CASE III. Female, 12 years old. Repetition of words and repetition of initial letters or syllables. Normal intelligence. Good health. Has had socially undesirable nervous habits. Speech characterized by rapid repetition of words, and repetition of initial letters and syllables. For example, "I-I-I wi-wi-wi-will for sha-sha-sure."

CASE IV. Male, 17 years old. Repetition of initial letters or syllables. Borderline intelligence. Much under par physically. Possible cerebral injury at birth. Speech diagnosed as bradyarthric and spasmophemic. His speech is slow and hesitant with repetition of initial letters and syllables. His speech is accompanied by facial grimaces, staring eyes, and head tics. Greatest difficulty with spontaneous speech. For example, "He s-s-s-s-said to ph-ph-ph-phone."

CASE V. Male, 19 years old. Speech blockage. Normal intelligence. Good health. Speech characterized by a severe blockage. The blockage consists of inability to open his mouth. For example, "I b-b-b-b-b-b-b-b-b-b-b can't do b-b-b-b-b-b-b-b-b it."

PROCEDURE

Testing.—A small room containing only a table and two chairs was used for testing. The subject faced the instructor across the table. Cases I, III, IV, and V were given the material to be read, and were instructed to read at their normal speed. They were allowed to read either for ten or twenty minutes. The instructor wrote every word stammered on sheets of paper prepared with columns for the various types of stammering which the subject exhibited. The last word read in the time limit was marked, and the total number of words read was counted.

The day before the test was to be given, Case II was told to read some stories. When about to be tested, he was asked to retell these stories. He was given the signal "go," and was told "stop" at the end of ten minutes. An assistant was present to count the number of words spoken during the ten minute period. This was done by a system of checks. The instructor recorded every word the subject stammered.

Case II (a former non-reader, now learning to read by the kinaesthetic method) exhibited almost no stammering in reading. He, moreover, substituted and left out many words. It was therefore decided to test his spontaneous speech. A reading test, however, was felt to be more objective for the other subjects. The hour of testing was the same for all the tests of the particular subject. Tests were given before the negative practice training was started, at intervals during the training, and after the negative practice was discontinued.

Practice Period.—Before starting the negative practice, the instructor spent from one to two weeks familiarizing himself with

the types of stammering shown by the subject. Then the undesirability of his stammering was discussed with the subject. It was explained that the only way to cure his stammering was by following in detail all instructions given. The subject was told that by voluntary repetition he could learn to control and then eliminate his stammering. It was emphasized that his voluntary stammer must resemble his involuntary stammer, if success was to be realized. The instructor endeavored to instill confidence in the method, always referring to it as a positive cure. When the instructor felt that the subject understood clearly and had confidence in this method, negative practice was begun.

From the list of words stammered in the first test, words were chosen and used in ten sentences. The words to be stammered were underlined. The other words were not to be stammered. The subject and the instructor during the practice period were alone in a small room containing only a table and two chairs. Preceding each practice period the subject was led to think in detail that the only way he could be cured was by perfecting his stammering (making his voluntary stammer as nearly like his involuntary stammer as possible), at the same time realizing that stammering was undesirable and should be eliminated.

Cases I, III, IV, and V were then shown the list of ten sentences, and were asked to stammer the first sentence. If the subject's voluntary stammer was not the same as his involuntary stammer (none of the subjects stammered correctly at first), the instructor stammered with him and showed him how. When the subject's voluntary stammer closely resembled his involuntary stammer, the subject was instructed (1) to stammer each sentence three times, (2) to say the sentence correctly with the instructor three times, (3) to say the sentence correctly alone once. Praise was given if the sentence was stammered correctly and if the sentence was said correctly alone. If the sentence was not stammered correctly the instructor criticized and encouraged. If the sentence was not said correctly alone, the sentence was again stammered, repeating the same procedure. Extreme caution was exercised to see that an involuntary stammer did not creep in.

After the subject had mastered the original ten sentences, new sentences were added to the list from time to time, some of the earlier sentences being dropped.

The sentences were read to Case II, otherwise the procedure was the same as for the others.

Cases IV and V were available as subjects only once a week. They were instructed to practice at home the other days, following the same procedure, and to keep a record of their negative practice time.

Case I at first practiced stammering every word in reading from a popular magazine. The results were such as to warrant changing the procedure to that given above.

RESULTS: QUANTITATIVE

Case 1—Speech blockage.

It was found that Case I increased in stammering after negative practice. Before negative practice was started the subject was found to stammer 3.08 per cent of the words read. A re-test showed that he stammered on 2.92 per cent of the words read. This indicates that the test was quite reliable. For a period of two weeks the subject was given negative practice. During this period the subject was instructed to stammer every word, reading from a popular magazine. He was given Test III and found to be stammering 8.14 per cent of the words read. This warranted a change in the application of the negative practice, and the method was changed to using sentences as explained in the procedure. After a few weeks of practice using the new procedure, Test IV was given, and the subject was found to stammer 4.33 per cent of the words read. After another week of practice, Test V was given, and the subject was found to stammer on 5.45 per cent of the words read. Negative practice was discontinued. A week later Test VI was given and the subject found to stammer on 4.40 per cent of the words read.

Case II—Repetition of words, initial letters, and syllables.

Case II was found to be definitely improved after negative practice. Test I was given before negative practice was begun. It was found that the subject stammered 15.20 per cent of the words spoken during the test period. After using negative practice for a month, the subject was given Test II. He was found to stammer on 6.45 per cent of the words spoken during the test period. The improvement after negative practice was 57.57 per cent.

Case III—Repetition of words, initial letters, and syllables.

Case III was found to show almost no stammering after negative practice. Before negative practice was started Test I was given. The subject was found to stammer 4.07 per cent of the words read. Test II was given for a check, and the subject was found to stammer 5.36 per cent of the words read. Although there is a reliable discrepancy between the results of these two tests, the difference perhaps may be due to the different time limits of the tests. Test I was for 20 minutes and Test II was only for 10 minutes. "Getting into swing" may be a factor.

After using negative practice for almost three weeks, Test III was given. The subject was found to stammer .56 per cent of the words read. Test IV was given as a check, and the subject was found to stammer .72 per cent of the words read. The improvement after negative practice, comparing Test I and Test IV was 82.31 per cent.

Case IV—Repetition of initial letters and syllables.

Case IV was found to be definitely improved after negative practice. Before negative practice was started Test I was given. The subject was found to stammer 14.84 per cent of the words read. The first week of negative practice was spent in stammering every word. The method was then changed to using sentences, as explained in the procedure. After three weeks of negative practice, Test II was given. It was found that the subject stammered 8.60 per cent of the words read. After two weeks, during which period there was little negative practice because of Easter vacation, Test III was given. The subject was found to have stammered 7.55 per cent of the words read. After another week of negative practice, Test IV was given. It was found that the subject stammered 4.35 per cent of the words read. The improvement after negative practice was 70.69 per cent.

Case V—Speech blockage.

It was found that Case V greatly increased in stammering after negative practice. Test I was given before negative practice was begun. The subject was found to stammer 4.68 per cent of the words read. After a month of negative practice Test II was given. It was found that the subject stammered 4.0 per cent of the words read. The next two weeks were Easter vacation. The subject did not come to the clinic. The subject reported that his stammer was becoming worse, and that he could not keep the involuntary stammer out when practicing at home. He did little practicing during this period, and did not keep a record of his negative practice time. Test III was given when the subject returned to the clinic. He was found to stammer 16.0 per cent of the words read. After a week of practice Test IV was given. It was found that the subject stammered 20.36 per cent of the words read. Negative practice was discontinued.

RESULTS: QUALITATIVE

Cases I and V, both having speech blockage, reported an increase in general physical tension during negative practice. They had extreme difficulty in keeping the involuntary stammer out, and later, during the negative practice treatment, they had almost no control of their involuntary stammer. Whenever they tried to stammer voluntarily, the involuntary stammer crept in.

None of the other cases showed or reported any involuntary stammer when attempting to stammer voluntarily (3)

SUMMARY AND CONCLUSIONS

Five stammering cases were given negative practice for approximately a month, in an endeavor to study the effect of negative prac-

tice on stammering. The stammering of three of the cases was characterized by repetition of words and repetition of initial letters or syllables. The other two cases had severe speech blockage.

1. The three cases of stammering characterized by repetition of words and repetition of initial letters or syllables showed definite improvement after negative practice.

2. The two cases of speech blockage definitely increased in stammering after negative practice.

3. The results indicate that negative practice can be used with very beneficial results in the treatment of the types of stammering characterized by repetition of words and repetition of initial letters or syllables.

4. It seems probable from this study that negative practice should not be used as a corrective treatment for cases of stammering characterized by speech blockage. Negative practice appears to increase this type of stammering.

5. The results of this investigation show that speech blockage is difficult to stimulate without having the involuntary stammer creep in. As negative practice implies that there must be voluntary repetition, it seems probable that negative practice is not applicable to the correction of speech blockage.

6. It seems to be indicated that speech blockage is not a habit, and that another explanation for this type of stammering must be sought.

7. It appears that stammering characterized by repetition of words and repetition of initial letters and syllables is a habit, and as such may be eliminated by the application of the proper learning laws.

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(3) For a full account of this investigation, including the actual tests used, the words stammered by each subject, and a detailed record of the amount of time each subject was given negative practice, the reader is referred to the library of the University of California at Los Angeles, where this study in its entirety is present in the form of a Master's Thesis.

FOUR DEVICES IN THE TREATMENT OF RHINOLALIA APERTA

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It seems evident that the quality of voice that we subjectively designate as nasal may be the result of the operation of any one of a number of causes. One of these causes, and perhaps the most common, is the escaping of the air stream through the nasal cavity in amounts and at times not typical of normal speech. This is the so-called rhinolalia aperta.

Ordinarily, the handling of a case of rhinolalia aperta in the speech clinic involves the following steps: (1) diagnosis to determine the type and probable cause of the nasality, (2) sensitization of the patient to his defect, (3) motivation of the patient, (4) a program of clinical procedures designed to overcome the nasality and (5) checks, objective in nature, if possible, on the progress made by the patient under treatment.

The purpose of this paper is to present certain devices that have been found useful in one or more of these steps in the clinical procedure. No attempt is made to summarize all of the possible techniques in a case of rhinolalia aperta. This discussion is confined to four specific devices. They are by no means new, but they are less widely known and of sufficient value to warrant our consideration.

1. The modified balloon blowing exercise.

Everyone is familiar with the balloon blowing exercise for developing voluntary control and strengthening the muscles of the soft palate. A slight modification of this exercise gives it still further value. An ordinary toy balloon is blown up until the air within it is under considerable pressure. This air is then allowed to flow back through the lips into the mouth cavity, where it is held dammed up by the closure of the vocal folds and of the soft palate. After a brief period of holding this position, the imprisoned air can be allowed to escape explosively through the nose by relaxing the muscles of the soft palate. It is important that the closed cavity be formed by the action of the back of the tongue against the palate. Otherwise, it is obviously no test of the firmness of the velar-pharyngeal closure.

If the patient is unable to make a complete closure of the nasopharyngeal opening, the imprisoned air will leak out through the nostrils, either slowly or rapidly, depending upon the size of the opening. With such a patient, the exercise serves as a vivid demonstration of his lack of control and, also, as a means of developing

such control. Patients who are able, at the beginning, to make such a closure properly will find the exercise more valuable than ordinary blowing for strengthening the muscles of the soft palate. Its chief value, however, lies in the very definite sensations developed in the palatal region as the muscles are relaxed and the compressed air escapes explosively through the naso-pharyngeal opening. The exercise is, thus, primarily a corrective device, although it has some slight value in motivation since it provides concrete evidence of any failure to close the soft palate and since it is a sort of a trick that children, at least, will enjoy learning. A number of trials may be necessary before the patient can do the exercise properly, but it is relatively easy to learn. The exercise should not be practiced if there is any evidence of a cold.

2. The manometric flame apparatus.

Nearly everyone is familiar with the manometric flame and its uses. It is likewise useful in the diagnosis and treatment of nasality. If the tube from the air chamber of the capsule is led to the nostril, any positive nasality will show itself as a wave in the revolving mirror. This apparatus is sensitive to very slight degrees of nasality. It is, thus, useful as an instrument of diagnosis. It is of great value in sensitizing the patient to his defect and in motivating his work to overcome it, because it makes his nasality visible, thus enabling him to compare the auditory sensations of his own voice with the more objective visual demonstration of the presence or absence of the nasal quality.

The manometric flame can likewise be used as a regular method of treatment. With it, the clinician can compare nasal and non-nasal sounds for the benefit of the patient, demonstrating both the visible and audible differences. The patient can use it in his practice periods. It is usually advisable to make the practice material progressive as to difficulty by working first with isolated vowels, then with vowel and consonant combinations, and next taking up words and sentences containing no nasal sounds. Combinations containing nasal sounds are usually more difficult and best left to the last. In each practice with the flame, the patient can listen to his own voice, observe the results on the flame and, at the same time, try to become kinesthetically conscious of the muscular adjustment that produces the desired quality.

The manometric flame can, likewise, be used to check, in a rough way, on the results of treatment. At best, however, it indicates only the presence or absence of nasality and not the amount present. Its use should be tempered by an understanding of two facts that become apparent after some experience in using the instrument with nasality cases. Some patients whose voices would be judged subjectively as quite nasal do not show up as nasal when tested with the manometric flame, while others whose voices may seem free from nasality may give a positive test on the instrument.

Within these limitations, however, the flame is a valuable adjunct in the treatment of rhinolalia aperta.

3. Modification of the apparatus used in testing the firmness of the velar-pharyngeal closure.

This device makes use of the principles involved in the apparatus used by Edward Nusbaum in connection with his work on his Masters thesis at the University of Wisconsin in 1931. A glass tube approximately one-half inch in diameter and four feet long is mounted perpendicularly to the work table. The lower end is attached by a short rubber tube to an ordinary water faucet. A second rubber tube, several feet in length, is attached to the upper end. This second tube ends in a "Y," upon the ends of which nose pieces are fixed. This is all the equipment needed. It is easily and cheaply erected.

In operation, the nose pieces on the upper tube are fitted firmly into the nostrils in an air-tight manner. The patient is then asked to intone a vowel while water is allowed to run slowly into the upright glass tube, thus raising the pressure within the system and consequently within the nasal cavity. If the patient has made a complete velar-pharyngeal closure, this pressure will continue to rise until it is sufficient to overcome the resistance of the palatal muscles and force the velum open. If desired, the glass tube can be graduated and the point of "breaking" recorded for future comparisons Care should be taken to construct and operate the apparatus in such a way as to avoid any possibility of water being forced into the nostrils, but with a few simple precautions this can be done.

The chief value of this device lies in its efficacy in strengthening the palatal muscles. It aids also in developing voluntary palatal control through sensory reports. It can be used to check, in a rough manner, the development, if any, in the ability of the patient to make a firm velar-pharyngeal closure.

4. The modified wet spirometer apparatus.

This piece of equipment was developed by Richard Flowers, one of the graduate students at Louisiana State University. It grew out of the desire for some equipment that would measure quantitatively the amount of air escaping through the nostrils in cases of positive nasality. It was observed that an ordinary wet spirometer responds slightly to a nasal tone if the breath tube is placed in one of the nostrils. It seemed that an apparatus operating on the principles of the wet spirometer might be constructed and made sufficiently sensitive to register the very slight changes of air pressure in the nostrils during the production of a nasal tone. A working model was made, in which the desired sensitivity was obtained by substituting a delicately counter-weighted lever mounted on a razor blade fulcrum for the regular pulley and weight set-up.

This device measures nasality only in so far as it is related to the amount of air escaping through the nostrils at any given period. It is still decidedly in the experimental stages, but, at present, its use seems to be limited to isolated vowels or, at best, a few connected words or short sentences. It seems possible that the apparatus may provide the means for a further check up on the relationship between subjective estimates of nasality and the amount of air that is actually escaping through the nostrils. It may, likewise, provide the means for more accurate diagnosis as to the type of nasality present and perhaps a more objective test than is yet available of the results of treatment.

The four devices described above have demonstrated value in the treatment of rhinolalia aperta. They are useful adjuncts in one or more of the steps in the clinical procedure, i. e., diagnosis, sensitization, motivation, treatment, or in checking the results of treatment. In general, they are more useful with cases that are already able, under certain conditions, to make the velar-pharyngeal closure but who fail to do so in habitual speech. They can likewise be used, however, with those cases who cannot make such a closure because of pathological conditions. It should be borne in mind that these devices are to be recommended only for those cases in which the nasality is caused by the escape of air through the nasal cavity in amounts and at times not typical of normal speech. Obviously, they need to be supplemented by the use of other techniques now common in the treatment of positive nasality.

NEWS ITEM

March 25 to 27, 1937, the American Association of Anatomists met in Toronto. Three hundred and three were registered. Among the papers of particular interest to members of this association were three on the lung. They treated the factors initiating respiration in the embryo, of such vital import to many concerned with speech disorders; the mechanical expansion of alveoli by the inhalation of amniotic fluid; and the nature of the ultimate alveolar lining. One hundred and fifty papers and fifty-eight demonstrations were covered in the lengthy program. Our members would also have been much interested in the lantern slide report of Dr. G. L. Streeter, on the International Congress of Anatomists at Milan, Italy, last September, attended by eight Americans, all of whom gave papers. Another paper of especial value to the speech pathologists was that of Professor Kappers, of the Institute for Brain Research, Amsterdam, Holland, which showed in detail the comparative anatomy of the hypothalmic autonomic centers; and that of Professor Ranson dealing with their functional significance.

THE CAUSE OF READING DISABILITIES AND THEIR REMEDY

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Speech defects are usually equally evident in both oral speech and oral reading. Reading disabilities, on the other hand, occur in silent reading, and are independent of any kind of speech defect. When I speak of reading, I shall refer to silent reading unless I definitely designate oral reading.

Non-readers are being referred to the speech pathologist more and more. In the interest of economy a single special teacher is sometimes appointed to supervise the instruction of children who are handicapped by deafness, by defective vision, by defective speech, or by inability to read as well as others of their age. Sometimes reading disability and defective speech result from the same cause. Sometimes non-readers develop stammering and other speech defects. It behooves the speech pathologist, therefore, to have a practical knowledge of the various causes of reading disability and of the special methods employed to teach non-readers to read.

Let us review, briefly, the mechanics of the eye movements in normal reading. Eye movements are not continuous across the page: the only sweeping glance is of the eye from the end of one line to the beginning of the next. The eye moves from left to right in a series of pauses or fixations and about 94% of the time consumed in reading is occupied by these fixations. Perception does not take place while the eye is moving; it takes place only at these fixations. It is on this principle that motion pictures are taken at intervals of not more than one-tenth of a second and flashed upon the screen at the rate at which they are taken; as the eye would have seen the original action photographed in a series of rapid fixations, the movies appear equally real.

Persons who read some six hundred words per minute may fixate but three or four times on each line of ordinary length; slow readers may fixate as many as fourteen times on the same line. The average normal number of fixations per hundred words varies with the age of the child and is 230 in the first grade, 147 in the second grade, 124 in the third, 103 in the fourth, 93 in high school, and 80 in college. The average speed in words per minute also varies with age and practice and is 32 in the first grade, 90 in the second grade, 138 in the third, 168 in the fourth, 182 in the fifth, 216 in the sixth, 280 in high school, and 335 in college. The average number of regressions, in which the child looks back a second time at certain words, varies

in normal children from 60 per hundred words in the first grade, 45 in the second grade, and 30 in the fourth grade to 17 in high school and 10 in college.

As comprehension takes place in entire words, phrases, or sentences, the eye should take in two entire short words or one long one at each fixation after the child has reached the fourth grade, and he should be able to read at least 150 words of average length per minute; if he cannot come up to this standard, he needs remedial treatment and training. If his eye regresses on more than every third word, he needs special training in reading from left to right. The child should be able to give an accurate account of everything he has read at these normal speeds; otherwise he cannot be said to read at these speeds.

The comprehension of the material read depends upon the kinds of mental imagery employed by the reader and upon their relative intensities. The visile gets the meaning directly from the printed words and may acquire a speed of 600 words per minute. The audile must translate the visual image of the printed word into an auditory image before he can comprehend the material read, and will do well if he acquires a maximum speed of 400 words per minute. The motile must translate the visual image into movement of his own articulatory mechanism and can read silently no faster than he can read aloud. As oral reading averages 132 words per minute for slow readers and 282 for fast readers, the motile will do well if he can comprehend silent reading at the rate of 300 words per minute. As the presence of auditory and kinaesthetic imagery slows down reading, the student who wishes to become a rapid reader must inhibit these types of imagery as much as possible during silent reading if his visual imagery is vivid enough to be relied upon.

Having reviewed the mechanics of silent reading, we are now in a position to understand the many causes of reading disabilities.

ETIOLOGY

1. It is obvious that mental deficiency is responsible for many reading disabilities. Idiots and imbeciles cannot be taught to read by any method, and morons can seldom if ever be taught to read rapidly with good comprehension.

2. Hyperemotionalism is responsible for many reading disabilities. A child who is always in a nervous hurry is apt to lack concentration and to be unable to develop good rhythm of eye movements. He is likely to guess a word from a few of its letters or to guess one or more words from the context.

3. Carelessness, like hyperemotionalism, causes many children to guess at words and to confuse similarly appearing letters such as *f* and *t;* such children seldom acquire good eye rhythm habits without special training.

4. It is obvious that the congenitally blind can never be taught to read by ordinary methods. They must be taught to read by

touch raised letters known as braille, and books must be translated into braille for their use.

5. The printed page looks about the same to persons who have defective vision, as a landscape looks to us as viewed through opera glasses which are out of focus. An oculist must fit to proper lenses these children with defective vision before they can learn to read by any method.

6. If a child is devoid of all visual imagery, although he may see the printed page clearly, he will be totally unable to comprehend it through his eye. If he is completely word-blind, he will have to be taught to read braille just like a child who is totally blind.

7. If a child's visual imagery is impaired, he will have to strengthen this all he can through concentration, and comprehend the printed page through auditory or motor cues, depending on whether he is an audile or a motile or both. We must help him to associate these different types of verbal imagery.

8. If a child has a short visual memory span he may be unable to grasp an entire word in a single fixation. He will have to learn to read in syllable units rather than word units until he develops a longer visual memory span.

9. As a child's vocabulary for words heard is always much larger than his vocabulary for words read or spoken by himself, he depends a good deal upon the sound of a familiar word in order to recognize it when he sees it in print. If a child has a short auditory memory span or poor sound discrimination, he may not recognize some of the less familiar words in his vocabulary when he sees them in print. He should be taught to read only those short, interesting, familiar words which come within his auditory memory span; words of more than one syllable and words containing two adjacent consonants should be omitted until he has a memory span for at least four digits.

10. Deficiencies of fusion are responsible for many reading disabilities. Just as speech may be acquired by one ear even if one is totally deaf in the other ear, so one may be taught to read with a single eye even if he is totally blind in the other. If, on the other hand, the two eyes do not work together normally, although each works well enough by itself, the child will be much confused by seeing different things with his two eyes. If there is inequality in size and vividness of the images in the two eyes, or if there is a deviation of the visual lines from parallelism as in squint, the images as seen in the two eyes do not fuse properly. By means of an instrument known as the stereoscope it is possible to see exactly what the printed page looks like to a child who has any of the defects which cause deficiencies of fusion.

If one were born totally blind in one eye, he would see everything in two dimensions only, as in a photograph. It takes two eyes to see in three dimensions, although one learns to get an approximate idea of distance with a single eye after long experience, and with the help of perspective and shadows.

The stereoscope will make certain facts clear. It is essentially an optical instrument in which two pictures of the same object, taken from slightly different points of view, corresponding to the two eyes, are simultaneously presented one to each eye. A piece of wood run from between the lenses in the eye piece to the picture makes it impossible for either eye to see the picture presented to the other eye. The two equal lenses, one for each eye, are inclined so as to shift the images toward one another and thus to facilitate the blending of the two images into one. If the small circle within a larger circle on a stereoscopic chart is placed nearer the nose in each picture, the observer will see a megaphone with the mouth end nearer him, because the eyes tend to converge on near objects; if, on the other hand, the smaller circle is moved toward the outside of the larger circle, he will seem to be looking through the megaphone with the larger end nearer him.

If one views a bright red square through the stereoscope with one eye and a bright yellow square of equal size with the other eye, he will see first a red square, then a yellow square, never an orange square, for colors do not blend in the stereoscope. These colors fluctuate at different rates for different persons, and fluctuate more often when one tends to wink than when he keeps from winking. They frequently fluctuate as rapidly as at intervals of five or ten seconds. If a single word printed in large type is seen with one eye in the stereoscope and the same word set in much smaller type is presented to the other eye, these words will be seen to alternate just as the two colors did. If different words are seen by the two eyes in the stereoscope, these, likewise, will appear to alternate. As these alternations will not make sense, the child becomes confused, and is just as unable to read the printed page as a normal reader is unable to read different texts presented to his two eyes in the stereoscope. It is necessary for an oculist either to operate, or to fit the non-reader to suitable prismatic lenses, and strengthen his eye muscles by suitable exercises, before he can be taught to read.

11. Finally, lack of unilateral cerebral dominance is known to cause many reading disabilities. Left-handed persons may be taught to read from left to right just as readily as right-handed persons. It is most unnatural, however, for a congenitally left-handed person who has learned to read and write from left to right to continue to do so after he has been partly or wholly converted from left- to right-handedness. Since the arms and hands are symmetrical, it is natural to move the right hand from right to left in doing the same operation that required the left hand to move in the opposite direction.

Orton[1] suggests that "in the process of early visual education, the storage of memory images of letters and words occurs in both hemispheres [of the brain], and that with the first efforts at learning

[1]Orton, Samuel T. Word Blindness in School Children. Archives of Neurology and Psychiatry, Vol. 14, pp. 581-615.

to read the external visual stimuli irradiate equally into the associative cortices of both hemispheres, and are there recorded in both dextrad and sinistrad orientation. . . . The process of learning to read entails the elision from the focus of attention of the confusing memory images of the non-dominant hemisphere which are in reversed form and order, and the selection of those which are correctly oriented and in correct sequence."

The frequency with which non-readers confuse antitropical letters such as small "d" with small "b," reverse letter pairs such as "Gary for "Gray," reverse whole syllables such as "tar-shin" for "tar-nish," reverse the major parts of words such as "tworrom" for "tomorrow," and read entire words backwards such as "was" for "saw" and "on" for "no," strongly suggests that there has been an incomplete inhibition of the antitropical memory patterns in the non-dominant hemisphere of their brains. As either right or left sequence may be followed in attempting to compare the words to be read with their memory images, this leads either to confusion or to delay in selection, and results in reading disability.

Non-readers who lack unilateral cerebral dominance should be taught to read with the metron-o-scope, which presents words one at a time across the page from left to right at any desired speed. If this instrument is not available, words should be spaced at least a quarter of an inch apart, in well separated lines, and a piece of cardboard, with an oblong hole cut out of its center just large enough to include the longest word to be read, should be moved across the page from left to right. After a few weeks of such training the child should be able to follow the motion of a toothpick across an ordinary page of large, well spaced type. At the same time unilateral cerebral dominance must be strengthened by the methods so well described by Travis in his book, "Speech Pathology."

DIAGNOSIS

Before a complete diagnosis can be made, the following data should be secured. The patient should be examined by an oculist for defective vision and for deficiencies of fusion. His intelligence should be tested by some non-verbal, performance test. His visual and his auditory memory span should be ascertained. A history should be obtained to show whether he has been hyperemotional and whether he has been converted from left- to right-handedness. It should be learned from observation with which foot he kicks, with which eye he looks at your nose through a ring made with his thumb and first finger of each hand held successively at arm's length, and with which hand he picks up objects, eats, cuts with scissors, writes, draws, etc. The relative prominence of his different types of mental imagery should be studied through his vocabulary and his reactions to objects and sounds about him. The movements of his eyes while reading should be studied from films taken with an ophthalm-o-graph; the examiner should look for reversals, for evidence that the two eyes are not moving in harmony, for too many fixations

per line, and for too lengthy fixations. If no opthalm-o-graph is available, he should observe the movements of the non-reader's eyes as he attempts to read. The nature of these eye movements is likely to suggest the kind of treatment advisable.

TREATMENT

I have outlined under the different causes of reading disability any special form of treatment which any one of those causes necessitates. The general treatment to be outlined here applies to practically all reading disabilities; it is most fortunate that a single form of treatment seems to get equally good results in reading disabilities caused in widely different ways.

Most non-readers seem to be totally unable to learn to read by the modern, time-saving flash system, in which each word is learned as a unit, much like a Chinese character. We have heard much more about non-readers since this flash system became so generally adopted. Because of my almost total lack of visual imagery I am sure I could never have learned to read by the flash system; it is indeed fortunate for me that the old-fashioned phonics method of sounding out the words was still in use while I was in school.

Non-readers must be taught to sound out their words from left to right by learning all the possible sounds which are represented by each letter or group of letters; once they have learned this, a process of trial and error will usually enable them to pronounce a new word correctly from the context of the rest of the sentence, because they already understand most of these words when they hear them spoken. It is not difficult for these non-readers to learn the different sounds which certain consonants and groups of consonants have. Of course they must learn that *TH* may be either surd or sonant and that final *S* is usually pronounced like *Z;* but if they try each of these two possibilities in the new word to be pronounced in their primer, the context will at once tell them whether the sound in question is surd or sonant. It is not hard to learn that initial *C* may be pronounced as *K* or as *S*, that *CH* is different from either *C* or *H*, that final *GE* is pronounced as *J*, that *QU* is pronounced like *KW*, that *WH* is pronounced as *HW*, that *X* is pronounced as *KS*, etc.

The real difficulty in teaching non-readers to sound out their words comes in teaching them how to pronounce their vowels. Of course one can teach them such rules as that long vowels come at the ends of syllables or have a silent vowel within their syllables, such as "*eat*," "*great*," "*rode*"; that *r* changes the sound of the vowel ahead of it unless this is a long vowel as pronounced in the alphabet; and that all other vowels may be assumed to be short. But there are exceptions to all of these rules and many words are not spelled as they are pronounced. For example, final *e* is usually silent in English; one or two adjacent vowels is likely to be silent; *aw*, *au*, and *al* are usually pronounced like *or; o* is often pronounced like short *u*, etc.

I have prepared for my non-readers two sets of cards. One contains all the possible ways of spelling a given sound unit, with

the rarer ways marked with an asterisk and the rarest ways enclosed in parentheses for future study. The other contains all the possible ways of pronouncing a given letter or group of letters graded in the same manner. I will give an example of each.

Short *e* as in END
is also spelled as follows:
(*a* as in any)
(*ai* as in said)
(*ay* as in says)
**ea* as in leather
(*ei* as in heifer)
(*eo* as in leopard)
(*ie* as in friend)
(*ue* as in guest)

Different Pronunciations of *ou*
(Long *o* as in boulder)
(Long *oo* as in soup)
(Short *oo* as in could)
(Short *u* as in touch)
(Circumflex *o* as in bought)
*Diphthong *ou* as in out
(Neutral vowel as in honour)

After the non-reader has mastered these cards, omitting for several months, the examples enclosed in parentheses, he is handed an illustrated primer and taught to sound out its words by trial and error until they make sense with the context and illustrations. He is never allowed to guess at a word from its context, as non-readers are prone to do, and is not asked to read the same passage many times, lest he memorize the page and get no training in sounding out his words. When he makes a mistake, he consults the card of the letter or group of letters mispronounced, and sounds these out in the word to be pronounced until he recognizes a word which makes sense in the context read; his whole face usually lights up when he recognizes the correct sound. I have not met with much success in teaching word families which rhyme; interesting sentences, rather than disconnected words, are needed to motivate the non-reader to concentrate on the task at hand.

After the non-reader has learned to pronounce most or all of the words in a few primers, it is necessary to train his eye to rhythmic eye movements across the page in order to speed up his reading. If a metron-o-scope is not available, one can move a card with an oblong hole in its center across the page as already outlined.

One can increase the non-reader's vocabulary by reading aloud to him and having him relate the substance of the text read.

If a child is cross-eyed it will probably be necessary to cover the defective eye until it has been trained, by exercises with the stereoscope or by other treatment prescribed by the oculist, to travel like its mate.

Unless vision or visual imagery are seriously impaired or the child is markedly deaf or feeble-minded, he should be taught in a reasonable length of time, varying with intelligence, interest, and co-operation, to read by the methods just outlined.

7th CONGRESS

of the

International Society of Logopedy and Phoniatry

held last August in

Medical Auditory of the Rigshospitalet in Copenhagen, Denmark

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SUNDAY, AUGUST 9

8:00 P. M.—Banquet in the Grossrestaurant "Wivex."

Members were guests of the Otolaryngologists and Speech Pathologists of Denmark.

MONDAY, AUGUST 10

9:00 A. M.—Opening and Greeting.

10:30 A. M.

I. Dr. V. Veau et Mme Borel-Maisonny-Paris: Phonation et Staphylorraphie.

II. Prof. R. Segre-Torino: Die prothetische Behandlung der Gaumenspalten.

III. Dir. H. Bering Liisberg-Kopenhagen: Le traitement pédagogique des malades de division palatine innée.

3:00 P. M.

1. W. E. M. Wardill, F. R. C. S.-Newcastle-upon-Tyne: Cleft palate and cleft palate speech.
2. Prof. G. Sanvenero-Rosselli-Milano: Les opérations orthophoniques dans le traitement chirurgical de la division palatine. (Avec projection d'un film chirurgical.)
3. Joan van Thal-London: Psychological problems in the treatment of cleft palate speech.

Discussion on treatment of cleft palate speech.

6:00 P. M.—Dinner at the Statens Institut for Talelidende.

Members were guests of the Institute.

TUESDAY, AUGUST 11

9:00 A. M.

4. Branco van Dantzig-Rotterdam: Über den individuellen und klassikalen Unterricht der Sprachgestörten. (Über Einladung des Präsidiums.)
5. M. Levy-Berlin: Erfahrungen aus logopädischer Gruppenbehandlung.
6. K. Veldkamp-Amsterdam: Das "Totalitäts-Prinzip"; besonders bei Aussprache-Korrektur und sprachtechnischer Schulung.

7. K. Veldkamp-Amsterdam: "Totalmittel" beim sprechtechnischen Unterricht.
8. Lektor V. Forchhammer-Kopenhagen: Die Rutz-Sievers' schen Beobachtungen und ihre Bedeutung für die Sprechpädagogik.
9. Dr. Samzelius-Lejdström-Stockholm: Atemuntersuchungen an Sprachgestörten.
10. Prof. David P. Boder-Chicago: Latest development in treatment of reading disability.

5:00 P. M.—Reception in the Rathaus of Copenhagen.

8:00 P. M.—Sightseeing trip through the city by night, by auto.

WEDNESDAY, AUGUST 12

9:00 A. M.

IV. Dr. D. Weiss—Wien: Physiologie der Stimme.

11. Prof. Th. S. Flatau—Berlin: Zur weiteren Entwicklung der Endostroboskopie des Kehlkopfes (mit Demonstration).
12. L. Kallen und H. S. Polin—New York: A physiological stroboscope.
13. Prof. E. Fröschels—Wien: Beobachtungen über die akustische Lokalisation stimmlicher Hyperfunktionen.
14. Dr. L. Barczinski—Berlin: Ein Beitrag zur Stimmtherapie.
15. G. Lasch—Wien: Physiologisches und Pathologisches in der Stimme des Schauspielers.
16. Dr. M. Ringer—Wien: Stimmveränderungen bei Lungen und Kehlkopftuberkulose. Ursache und Verhütung.

3:00 P. M.

17. Dr. A. Tamm—Stockholm: Zur psychologischen Behandlung das Stotterns.
18. Dr. H. Freund—Zagreb: Psychologisches zum Stotterproblem.
19. L. Pátzay-Liebermann: Bewegungstherapie bei Stotterern. Ergebnisse eines experimentellen bewegungstherapeutischen Kurses.
20. I. Martha-Vié—Paris: Trouble grave du langage chez une enfant intelligente, atteinte de débilité motrice.
21. Ph. Franklin, F. R. C. S.-London: A new system of early education of the deaf-mute baby.
22. Dir. D. Kanizsai-Budapest: Gehöruntersuchungen an schneckenlosen Hunden.

6:00 P. M.—General Session.

8:00 P. M.—Closing banquet in the Tivoli.

Convention fee: 10 Danish Kronen.
Membership fee: 14 Austrian Shilling.

NEWS ITEMS

Dr. Lowell J. Reed has been appointed dean of the School of Hygiene and Public Health at Johns Hopkins University. He succeeds Dr. Allen W. Freeman.

The Eastern Branch of the American Psychological Association held its spring meeting at Vassar College on April 3, 1937. Dr. Karl S. Lashley, of Harvard University, was elected president to succeed Dr. Samuel W. Fernberger, of the University of Pennsylvania.

The fourth Arno B. Luckhardt lecture was given by Dr. Leo Loeb, professor emeritus of pathology of Washington University School of Medicine, St. Louis, on March 30, 1937. Subject: *The Biological Basis of Individuality*, a paper which would have been of considerable interest to speech pathologists generally.

Dr. R. W. Gerard, of the University of Chicago, gave a James Arthur lecture at the American Museum of Natural History on the subject of *Dynamic Neural Patterns.*

Dr. Lee Travis, president of the American Speech Correction Association during the last term, has just been named chairman of the department of psychology at the University of Iowa, where he has been director of the speech clinic for so many years. In this additional position of increased responsibility, he succeeds Dean Carl Emil Seashore, who recently retired from active direction of the graduate school and department of psychology. No man in this country or abroad has achieved greater prominence in the field of speech research than the well beloved scholar and scientist Dr. Travis follows; and since the teacher, mentor, and predecessor is possessed of such an active mind and virile personality it is anticipated he will continue to be the same intensive and prolific contributor he has always been.

An address on *The Autonomic Center of the Hypo-Thalamus* was given at the Long Island College of Medicine on April 7, 1937, by Dr. C. V. Ariens Kappers, director of the Central Institute of Brain Research of Amsterdam.

Prof. A. N. Bach, who recently celebrated his eightieth birthday and fiftieth anniversary of scientific activity, had the Order of Lenin conferred on him by the U. S. S. R. for his work on respiration and other activities of the living being.

Among the papers given before the thirteenth annual meeting of the Missouri Public Health Association, April 29 and 30, 1937, were a number of interest to speech pathologists, on the crippled child, tuberculosis, oral hygiene, cancer, venereal disease, maternal welfare, etc.

AN INTEGRATION OF STUTTERING THERAPIES

EUGENE HAHN,
University of Southern California

No one doubts that speech correction is receiving increasing attention from the school administrators. This has been due partly to a constant growth in professional literature, to the addition of speech clinics to universities, new clinicians in the field, and speech teachers generally becoming interested in the work. A specific example of this new growth can be seen in California. Recently, clinicians in the northern part of the state organized themselves into a speech therapists group in order to work in closer harmony and to discuss the various problems confronting them. The state department of education has refused to provide funds for speech correction in public schools unless teachers hold speech correction credentials.

The adequacy of the work is further assured by the requirements of this speech correction credential. At the University of Southern California, plans have just been completed for the issuing of these credentials on the basis of the following requirements: an A.B. degree, a teaching credential, a major or its equivalent in speech, and fourteen semester hours in speech correction with fifty clinical hours under observation and supervision.

Such increase of interest is not by any means confined to this state alone. It is, however, but one aspect of our present status. No evaluation can be made without the recognition of considerable confusion in the field regarding the treatment of those who stutter. It is the purpose of this paper to point out the confusion and to offer a possible solution for consideration.

The confusion is due to the variety of stuttering therapies. The beginning speech correctionist has been informed of the number of theories and therapies. He has heard that each upholds its cures and that each differs widely from the others. Because he is convinced of the extent of the deviations, he is not aware of the possible correlation between treatments and is consequently confused as to the best method to apply to his own work.

Aside from being disconcerted by the variety of therapies, the student clinician is handicapped by the feeling of intolerance among clinicians and speech pathologists of one institution in regard to methods used by others. The result of this situation is that the future speech correction teacher receives training in the use of one therapy only. While he may be given information on other prevalent theories, often he has no practice in their use and is therefore not

capable of making his own evaluation or of ascertaining possible overlapping methods. Thus each clinician rallies to the therapy under which he has been trained as if he were supporting a political party and similarly, he is just as blind to the merits of the other factions.

The fact that a university speech clinic doing research on one theory advocates one particular therapeutic measure for all who stutter is perplexing to school administrators, the general public interested in speech correction and to the stutterers themselves. The stutterers may not be receiving the possible benefit of having different treatments suited to their individual needs.

The student of speech correction is sometimes confounded by the new and occasionally startling theories and treatments offered for the cure of stuttering. If he had a complete understanding of those therapies which are and have been used for some time in reputable centers of learning and if he were aware of correlating elements between the therapies so that he would realize that many are basically sound, he would not be shaken by new and as yet unproven theories. Training in correct and stable evaluations of research data might tend to remedy this precarious uncertainty.

Another point which complicates the field is that certain terms are used under certain therapies which on close examination have different meanings for different people. The term mental hygiene is an example of this. According to definition in two psychology books, *Psychology of Adjustment*, by Shaeffer, and *Mental Health*, by Howard and Patry respectively, mental hygiene is defined as "The positive guidance of the ordinary course of life in such a way as to promote desirable traits of personality and to avoid maladjustments" as well as "The treatment of persons who are already maladjusted."[1] The second book, "In its widest sense, mental hygiene has come to mean the satisfaction of an individual or a group in making everyday adjustments to life."[2] Yet all clinicians do not interpret mental hygiene in this way. According to some clinicians,[3] if the individual is adjusted to his difficulty, if it does not worry or cause him anxiety and he is satisfied with his relationship to life situations, the requirements of mental hygiene are met. On the other hand, might not the requirements of mental hygiene necessitate an insight into the seriousness of poor speech rhythm, as a hindrance to social adjustment and the desirability of the cultivation of a pleasing personality through adequate speech training. In fact, all stutterers are maladjusted to group living and are in need of mental hygiene treatment in this broader sense. If the stutterer is well

[1]L. P. Schaeffer, *Psychology of Adjustment*. (New York: Houghton Mifflin Company, 1936), pp. 436–37.

[2]Frank Howard and Frederick Patry, *Mental Health*. (New York: Harper and Brothers, 1935), p. 484.

[3]Bryng Bryngelson, "A Method of Stuttering," *Journal of Abnormal and Social Psychology*, Vol. 30, No. 2, July to Sept., 1935.

adjusted to his difficulty, it is not good mental hygiene per se but indicates need for mental hygiene. Exceptions could be classified under the primary stage of stuttering as differentiated from the secondary stage. Mental hygiene used in the treatment of stutterers may deviate between these two points of view.

Another term which may have a variety of explanations is voluntary stuttering. Voluntary stuttering or negative practice as it is known under the Knight Dunlap[4] therapy, is in itself the main means toward a cure of stuttering. The stutterer studies his particular type of involuntary spasm, and copies it as nearly as possible, all the time having clearly in mind that this is not the action to be pursued in the future. Another interpretation of voluntary stuttering is that by its use there are neurological advantages. Dr. Bryngelson says, "Constant repetition of the initial letter, syllable, or word mobilizes speech energy on the highest level of response and tends ultimately to build a center of greatest dominance in the brain."[5] Psychologically, it has benefit because it objectifies the stuttering and tends to remove the emotional associations. This method is used in conjunction with the development of sidedness at the University of Minnesota Speech Clinic and at the University of Iowa Speech Clinic under Dr. Lee Edward Travis and Dr. Wendell Johnson.[6] Although the method used in these two clinics differs considerably from that of Dunlap in the instructions given to the stutterers and the objectives set up in their minds, might not the end result be the same under both—namely, eliminating stuttering?

The benefits of the awakening interest in speech correction will be lost and the advancement inhibited unless some means are taken to eliminate the confusion caused by the above disturbing factors. The complexity caused by the variety of stuttering therapies may perhaps be avoided by pointing out possible correlations between treatments.

Some common denominators seem prevalent to two or more therapies. Relaxation or freedom from tenseness seems to be one of these basic principles. The English point of view is well presented by Seth and Guthrie,[7] and Boone and Richardson,[8] in the United States by Dr. Robert West,[9] Jessie W. Wilson,[10] Dr. Smiley Blanton,

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[4]Knight Dunlap, *Habits, Their Making and Unmaking.* (New York: Liveright Publishing Company, 1932.)

[5]Bryng Bryngelson, *Op. cit.*, p. 196.

[6]Wendell Johnson, *Stutterers' Manual.* (Iowa City, Iowa, 1934.)

[7]George Seth and Douglas Guthrie, *Speech in Childhood.* (London: Oxford University Press, 1935.)

[8]E. J. Boone and M. A. Richardson, *Nature and Treatment of Stuttering.* (New York: E. P. Dutton and Company, 1932.)

[9]Robert West, *Disorders of Speech and Voice,* 3rd edition. (Madison, Wisconsin: College Typing Company, 1935.)

[10]Jessie B. Wilson, "Why Stutterers React Favorably to Many Varieties of Treatment," *Technical Papers,* American Society for Study of Disorders of Speech, Ed. West. (Madison, Wisconsin: College Typing Company, 1932.)

who says, "Relaxation is an excellent adjunct to treatment.[11] Dr. James Green, "The environment we try to build up is one that will move at a slower pace, one that will be free from tension and excitability so that he can feel constantly relaxed,"[12] Mabel F. Gifford[13] and Dr. C. S. Bluemel[14] who advocates bed rest, tranquillity, and circumstances conducive to composure.

The second common goal is the building of confidence in speech situations. Anyone familiar at all with speech therapies knows that this element is considered important by all of the correctionists and various details of treatment are delegated to this end.

Certainly the principle of suggestion is well represented in practically all therapies whether it is called by that name or not. It is particularly emphasized by Mrs. Gifford, Dr. Greene, Seth and Guthrie, Boone and Richardson, Dr. Dunlap, and Samuel D. Robbins.[15]

Breath control is sponsored in the practices of the theories by Mrs. Gifford, Dr. West, and Dr. Greene, who believes that "Breath control is an aid to emotional control."[16]

The following advocate of rhythmical co-ordination in their therapies: Dr. John Muyskens,[17] Seth and Guthrie, Boone and Richardson, and Robbins.

The visualization technique originated by Dr. Walter Swift[18] is no doubt contained to some degree in the projected imagination and silent recall steps of Mrs. Gifford's therapy.

There seems to be a technique common to the therapies which might be classified as speech re-education treatment. The three learning theories as proposed by psychologists:[19] trial and error, conditioned response, and the Gestalt insight, may be involved in this therapy. These are exemplified by such practices as: voluntary stuttering and correlary techniques used at the Iowa and Minnesota

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[11]Smiley Blanton, *For Stutterers*. (New York: Appleton-Century Company, 1936.)

[12]James Greene, *A Symposium of Stuttering*, Ed. West. (Madison, Wisconsin: College Typing Company, 1931), p. 170.

[13]Mabel Farrington Gifford, *First Aid in the Correction of the Nervous Speech Disorders*, Series 2. (San Francisco: Harr Wagner.)

[14]C. S. Bluemel, *Stammering and Allied Disorders*. (New York: Macmillan Company, 1935.)

[15]Samuel D. Robbins, "The Contribution of Suggestion and of Distraction to the Treatment of Stammering," *Technical Papers*, Ed. West. (Madison, Wisconsin: College Typing Company, 1931.)

[16]Eugene Hahn, "A Compendium of Some Theories and Therapies of Stuttering," approved by Dr. Greene, unpublished.

[17]Eugene Hahn, "A Compendium of Some Theories and Therapies of Stuttering," approved by Dr. Muyskens, unpublished.

[18]Walter B. Swift, "Why Visualization is the Best Method for Stammering," *Symposium of Stuttering*, Ed. West. (Madison, Wisconsin: College Typing Company, 1930.)

[19]J. F. Dashiell, *Psychological Bulletin*, "A Survey and Synthesis of Learning Theories," Vol. 32, No. 4 (April, 1935), p. 274.

speech clinics, negative practice, the building of the fluency image under Mrs. Gifford's treatment, and Dr. Bluemel's reinforcement. Bluemel has built his explanation of stuttering largely on the conditioned response theory.

Although the term of stabilization may be like the term distraction[20] which we have purposely avoided as being too all inclusive, still it seems to be a definite goal of speech correctionists. It is quite apparent that every speech clinician is concerned with finding out all that is possible about the predisposing and immediate causes of stuttering in the individual's case history as directly concerned with the physical, nervous, and emotional development of the patient. Probably one of the best exemplifications of the use of stabilization is displayed at the Iowa clinic under the direction of Dr. Travis.[21]

These factors of freedom from tenseness, building of confidence, suggestion, breath control, rhythmical co-ordination, visualization, speech re-education, and general stabilization, seem to be fundamentals to many therapies. It might also be suggested that they overlap in meaning, that they receive varying amounts of emphasis under different therapies, and that it is possible that the use of a different classification would still include most of these common denominators.

The study of these stuttering therapies which has shown a correlation between treatments may also diminish some of the confusion among clinicians by giving evidence of the possibilities of an eclectic point of view.

From reports of various sections of the country, it would seem that clinicians are getting results and yet they subscribe to varying treatments. How is this possible? No doubt some of these factors are present: first, the data as to helps and cures is not accurate because of the lack of scientific methods used in determining results. Second, the overlapping of factors in treatment may be the cause of the prevalence of cures, the difference being more theoretical than real. Third, possibly most of these speech correction teachers are right in their approach. No one claims to cure all who stutter, but only a portion. If it is true that all are curing some who stutter, it seems reasonable to adopt those elements which might be considered as good features from all of these techniques, and not do as some are doing in following their own and rejecting all others.

Speech clinics need to be encouraged and research carried on; much can be done toward solving some of the problems raised in this paper, but in the meantime, what is the active clinician to do? It would seem feasible to adopt the eclectic viewpoint and to integrate these therapies in trying to determine wherein each is most suitable to the needs of the individual stutterer.

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[20]Samuel D. Robbins, *Op. cit.*

[21]Lee Edward Travis, *Speech Pathology.* (New York: Appleton & Company, 1931.)

To illustrate how this integration might be accomplished: one could sometimes follow the suggestions made by Dr. Bluemel regarding primary stuttering. The benefits of bed rest and tranquillity at the initial onset of stuttering can hardly be questioned. Further, even if one hesitated before changing the handedness of a stutterer, one could not deny the value of developing a single sidedness toward the establishment of stability when its need is apparent. One might not agree with Dr. Blanton about the necessity of a psychiatrist, but he could hardly doubt the value of insight gained from a study of the stutterer's emotional patterns as are outlined by Dr. Blanton. Work on rhythm would be beneficial when there is apparent lack of co-ordination and this could be supplemented with confidence building and relaxation.

In other words, the primary step in treating a stutterer is to study the individual to determine his specific needs. A thorough acquaintance with all therapies will offer the clinician the opportunity to prescribe a beneficial program for each stutterer. It may be true that in the special and particular use of one therapy, speech pathologists are getting their satisfactory results because certain stutterers are more amenable to that kind of remedial treatment than to other methods.

A typical example of using a variety of recommended treatments is the case of a young boy of three years. When he first reported to the clinic, this child stuttered in an easy, bouncy way, consistently on most of his words. To obtain a complete case history, a detailed questionnaire developed in the Iowa Speech and Psychological clinic particularly for young children was used. From frequent trips made to study the boy in his home environment and from the study of the case history obtained, the following recommendations were made: first, that the boy be kept at home as much as possible away from neighboring playmates and from an older brother; second, that due to observation that the left hand fingernails were worn down, the child was encouraged to use his left hand in every activity; (parents had been favoring the use of the right hand); third, that the child have daily speech lessons under his mother's direction with the child being unaware of the purpose of the lessons; these were conducted as Dr. Bluemel recommends with the reinforcement of speech; fourth, that the child have as tranquil an environment as possible. It was not long before the child was correcting his own speech and within a period of two months, the stuttering had disappeared. One year later, this was further substantiated by a visit to the home.

It cannot be stated whether any one of these factors of treatment was responsible for the cure, but it is apparent that therapeutics from several pathologists were used in this case.

In order to illustrate further how certain stutterers are helped, the following is presented as a very recent example. A young man had attended the University of Wisconsin and was helped so much by a mental hygiene technique under Dr. West, replacing his

inferiority complex with such a feeling of confidence that he was able upon graduating from college to go into a family business and to take charge of men whose daily payroll approximated $1600. With overwork came several relapses of his speech, but he was always able to return to normal speech unaided. Finally it became apparent that the factory was about to be closed because of new inventions. With the strain there was the recurrence of his difficulty which became so pronounced that he could no longer speak to other people and had to give up work entirely. He was not able to meet the situation alone. When he reported to the speech clinic at the University of Southern California two months ago, he was given treatment with particular emphasis such as is used by Mrs. Gifford. He has progressed to the point where he is now able to communicate with everyone and only occasionally has a slight spasm. He is so confident that he is leaving for a three months tour of the Orient. This stutterer then is amenable to a psychological treatment.

Further, to show how stutterers as individuals respond to different techniques, a young lady who had stuttered for twenty years reported to the School of Speech with the information that she had cured herself of stuttering and wanted to tell it so that others might have the benefit. During the long interview under conditions made emotional by the fact that she was demonstrating the cure by her own theory, she did not stutter nor had she stuttered for some seven months according to her report. Her explanation was nothing more than that she had learned to hold the sound preceding the one which she was aware would cause difficulty. She had now worked through this period into good rhythmical speech.

At the University of Southern California Speech Clinic a program is formulated which will allow for the practice of any therapeutic technique which is thought to be the best suited to the individual's needs.

It has been found advisable under our facilities to make recommendations of a shift of handedness only when a specific case history has shown the necessity and it is convenient to do so. Frequently in such cases of change, Mrs. Gifford's program of speech re-education is the supplementary remedial treatment. We found this latter emphasis has been of particular value to adult stutterers organized in classes. Occasionally a few are segregated and put on Dunlap's negative treatment. Some college students with difficulty with only one or two sounds have made considerable improvement under this negative practice. Experience has shown that stutterers with the speech blockade type of difficulty unable to produce a sound do not benefit from this treatment. This was further substantiated by a limited research carried on under Dr. Dunlap's supervision at the University of California at Los Angeles.[22]

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[22]Harold C. Fishman, *A Study of the Efficacy of Negative Practice as a Corrective for Stammering*, Thesis, Department of Psychology, University of California at Los Angeles, 1934.

In summary of what has been presented, it has been found that there is confusion in the speech correction field because of the variety of remedial treatments, because students of speech correction often receive training in one therapy only depending upon the university at which they study, because correlating factors existing between various therapies are rarely pointed out to students, and because certain terms overlap in meaning. As the means to eliminate this confusion, it has been suggested that possible correlations between treatments be ascertained through a close examination of all accepted therapies, that because of the cures in evidence under varying therapies, it might be true that elements in each are suited to the specific needs of individual stutterers, and that, for this reason, an eclectic point of view toward all therapies would be of definite value in meeting the various types of stuttering problems. To this end, an integration of stuttering therapies is recommended.

It is doubtful whether any one person could pick out common denominators to all therapies which would be satisfactory to all speech pathologists. Also, it is indeed questionable whether any one person could present a general educational program eclectic enough to allow for individual therapeutic application from all accepted therapies in support of stuttering theories. However, it seems most reasonable to assume that a committee composed of concerned speech pathologists could formulate such necessary steps and present these to the American Speech Correction Association for acceptance which would be of inestimable value to all concerned with this vital problem, the treatment of those who stutter.

NEWS ITEMS

The speech pathologist who is particularly concerned with child and social psychology will be interested to know that Dr. Wayne Dennis, of the University of Virginia, has been appointed visiting professor of psychology at Clark University, offering work in those fields for the academic year 1937–38.

Dr. Detlev W. Bronk, Johnson professor of biophysics at the University of Pennsylvania, gave an address on *Electrical Methods in the Study of Nerve and Muscle*, before the seventy-first meeting of the American Electro-chemical Society, held in Philadelphia on April 28, 29, and 30, 1937. A number of others of equal import to our group were also presented by different individuals.

STUDIES IN THE PSYCHOLOGY OF STUTTERING: IV.

A Quantitative Study of Expectation of Stuttering as a Process Involving a Low Degree of Consciousness[1]

WENDELL JOHNSON AND ANITA SOLOMON,
State University of Iowa

It was the purpose of this study to investigate expectation of stuttering as a factor related to stuttering when experimental conditions are such that expectation cannot readily occur as a highly conscious process.

Thirteen adult stutterers served as subjects. Each gave four 1000-word readings. For Reading I the subject was given a copy of the passage, and he was asked to go over it carefully and to underline every word on which he expected to stutter upon reading the passage aloud to the experimenter, who was present while the stutterer made this preliminary study of the material. The stutterer was told he was to read the passage immediately after marking it. The subject then gave his marked copy to the experimenter, who indicated on it all words stuttered by the subject as he read from an unmarked copy of the same passage. About ten to fifteen minutes elapsed between the time when the stutterer marked—or did not mark—a word and the time when he actually attempted to speak it.

For Reading II exactly the same procedure was followed.

For Reading III the same procedure was followed with the exception that the passage was marked by the stutterer one day and read orally from one to seven days later. For all subjects but two, the interval was one day.

For Reading IV the same procedure was followed as for Readings I and II, except that the speaking situation was different from the situation in which the judgments were expressed. Before marking the anticipation words, the subject was told that he would read the passage, immediately after marking it, speaking before a microphone, and that a phonograph record of his reading would be made.

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[1]From the State University of Iowa Speech Clinic, Professor Lee Edward Travis, Director. All data and materials pertinent to this study are on file in the State University of Iowa Speech Clinic.

The reading situation was highly constant objectively for all subjects. The same person served as experimenter for all readings.

The reliability of the experimenter in observing stuttering spasms was determined in two ways. First, the experimenter played each of four recordings of stuttering speech on four separate days, marking spasms on copies of the passages being read and played. The average per cent agreement from day to day was 97. Second, the experimenter and another trained clinician observed a stutterer as he read three different passages. The per cent agreement of the two observers was 92.5. The degree of reliability represented by this number may be shown best perhaps by saying that the two spasm counts for the three readings were, respectively, 17–18, 9–10, 11–12. It is clear that the data obtained were sufficiently reliable for the purposes of the study.

Data are presented in summary form in Table I.

TABLE I

THE AVERAGE PER CENT OF WORDS ON WHICH STUTTERING WAS AND WAS NOT EXPECTED (ANTICIPATION-WORDS AND NON-ANTICIPATION-WORDS), RESPECTIVELY, WHICH WERE STUTTERED. ALL READINGS

	No. Subjects	No. Words Read	No. Words Stuttered	No. Ant. Words	Of Ant. Words % Stut.	Of Non-Ant. Words % Stut.
Reading I.....	13	12,948[2]	2,553	1,942	53.2	13.8
$\frac{D}{\sigma \text{ diff.}}$					35.8	
Reading II....	13	13,000	2,342	2,314	64.2	8.0
$\frac{D}{\sigma \text{ diff.}}$					56.2	
Reading III...	12	12,000	2,084	2,556	51.1	8.2
$\frac{D}{\sigma \text{ diff.}}$					42.9	
Reading IV....	10	9,360[3]	1,060	905	42.7	8.0
$\frac{D}{\sigma \text{ diff.}}$					26.7	
Total.....		47,308	8,039	7,717		

In this study stuttering occurred on approximately 53 per cent of the words on which stuttering was expected, and on about 10 per cent of the words on which stuttering was not expected. We are chiefly interested, however, in the critical ratios, $\frac{D}{\sigma \text{ diff.}}$, shown in Table I. The size of these CR's indicates definitely that expectation

[2]Because of a printer's error, the passage used for this reading contained only 996 words.

[3]One stutterer was apparently exhausted from excessive stuttering after reading 360 words, and for him the reading was terminated at that point.

of stuttering is associated in some way with the precipitation of moments of stuttering. This is in line with the findings of Knott, Johnson, and Webster (1). These investigators, however, called for judgments as to expectation of stuttering immediately prior to the speech attempt for each word. Thus, they studied expectation as it occurs on a highly conscious level.

It is clearly important to determine whether and to what degree expectation is associated with stuttering when the stutterer does not have a reasonable opportunity to decide on a highly conscious level immediately before speaking a given word whether or not he expects to stutter on the word. This is essentially the condition that prevails during ordinary speech or oral reading when the stutterer seldom has adequate time between words to formulate a thoroughly deliberated judgment as to expectation of stuttering, and when numerous other matters are engaging his attention. The problem of studying expectation of stuttering under such conditions presents great technical difficulties. We believe that in this study we have overcome these difficulties in large measure by (1) interposing a considerable time interval between the judgment as to expectation and the speech attempt, (2) having the speech attempt made in a situation different from the one in which the judgment was rendered (Reading IV), and (3) having the stutterer read at his ordinary rate, and requesting no introspections during oral reading. Because of the method used, therefore, the present findings indicate that expectation of stuttering not only functions in relation to the precipitation of moments of stuttering, but also that it need not operate on a highly conscious level.

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(1) KNOTT, J. R., JOHNSON, W., AND WEBSTER, M. J. Studies in the Psychology of Stuttering: II. A Quantitative Evaluation of Expectation of Stuttering in Relation to the Occurrence of Stuttering. Journal of Speech Disorders, March, 1937, 20–22.

NEWS ITEM

The Council on Physical Therapy of the American Medical Association announced in its report of the annual meeting that grants to aid in research are to be placed at the disposal of applicants concerned with problems of merit in the field of physical therapy. It is barely possible that the many concerned especially with the speech of spastics and other like subjects, might be interested in this announcement. Apply to the secretary of the Council on Physical Therapy, of the American Medical Association, 535 North Dearborn Street, Chicago, Ill.

STUDIES IN THE PSYCHOLOGY OF STUTTERING: V.

Frequency of Stuttering with Expectation of Stuttering Controlled[1]

WENDELL JOHNSON AND ARLIEN SINN,
State University of Iowa

Two previous studies in this series (2, 4) have served to demonstrate quantitatively that expectation of stuttering is related to the occurrence of stuttering. This line of research is carried further in the present study which was designed to ascertain, first, the frequency of stuttering when expectation of stuttering is not permitted to affect speech; second, whether there is a tendency for stuttering to be expected on words previously stuttered; and third, whether there is a tendency for apparently unexpected stuttering to occur on words previously stuttered.

Each of 28 adult stutterers read a 1000-word passage, a total of 28,000 words, and stuttered 8.76 per cent of them.[2] Then on separate days, each stutterer made from one to six additional readings of the same words, indicating to the experimenter before each word whether or not he expected to stutter on the word, and omitting all words on which stuttering was expected. In these readings 48,421 words were actually read aloud, and of these only 79, or 0.16 per cent, were stuttered. The per cent of words stuttered in the first reading (8.76), in which expectation of stuttering was not controlled, was compared with the per cent of words stuttered in the second reading (0.14), third reading (0.20), and in the fourth and subsequent readings (0.15), respectively. The difference in these terms between the first and second readings was 86.2 times larger than its probable error; the difference between the first and third readings was 85.6 times larger than its probable error; and the difference between the first and fourth and subsequent readings, these being combined for tabulation, was 86.1 times larger than its probable error.

The proportion of words stuttered was decreased 98.4 per cent in the second reading as compared with the first, 97.7 per cent in

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[1]From the State University of Iowa Speech Clinic, Professor Lee Edward Travis, Director. All data and materials pertinent to this study are on file in the State University of Iowa Speech Clinic.

[2]Stuttered words were marked by the experimenter on a duplicate copy of the passage read. The same person served as experimenter throughout the study. The experimenter's observational reliability was 97, this being the average per cent agreement when phonographically recorded stuttering speech was repeatedly checked for spasms. This technique is described in previous reports (2, 3).

the third reading as compared with the first, and 98.4 per cent in the fourth and subsequent readings as compared with the first, an average of 98.1 per cent. In other words, about 98 per cent of the stuttering of these subjects was eliminated by having them speak only words on which they did not expect to stutter.

Of the 48,421 words read in the second and subsequent readings, only 79 were stuttered, and introspections were obtained in each instance immediately after the stuttering occurred. Of the 79 words, 16 were anticipation words but the stutterer forgot to indicate the expectation and to omit the words. Nevertheless, they were counted as words "unexpectedly stuttered." Moreover, for 16 other words instructions were not adequately carried out: five spasms occurred when the subject was reading relatively far ahead silently and failed to formulate a judgment as to expectation of stuttering on the word he was about to read orally; eleven words were stuttered when the subject's attention had apparently wandered from the words to be read and from the task assigned. In view of these facts, the conclusions drawn from this study are more conservative than it would have been strictly necessary to make them. There were nine stuttered words, of the proper pronunciation of which the subject was uncertain. Eight of the spasms occurred on words containing sounds which the subject usually considered difficult. Five spasms occurred, interestingly enough, when the subject was anticipating stuttering on some other word ahead of his oral reading, stuttering occurring on the word being read orally. There were 10 spasms, introspections concerning which gave no clue to factors associated with their precipitation.

In connection with the second purpose of the study, it was found that expectation of stuttering tended to occur on previously stuttered words (words which had been stuttered in the first reading). The difference between 32.8 per cent and 3.7 per cent (the per cents of stuttered and non-stuttered words, respectively, in Reading I, which were anticipation words in Reading II) is 42.1 times larger than its probable error. The same type of analysis was made for the third and subsequent readings with similar results. The difference between 61.3 per cent and 6.5 per cent (the per cents of stuttered and non-stuttered words, respectively, in Reading I, which were anticipation words in either the second, third, or fourth readings) is 71.1 times larger than its probable error.

As for the third purpose of the study, it was found that apparently unexpected stuttering also tended to occur on words that had been stuttered in Reading I. Of the 32 words stuttered in Reading II, 47.4 per cent had been stuttered in Reading I, while only 11.9 per cent should have been according to chance.[3] The difference between these two per cents is 5.1 times larger than its probable error.

[3]The subjects who stuttered in Reading II had stuttered 11.9 per cent of the words they read in Reading I. On the basis of chance, 11.9 per cent of any random sample of words in Reading I should have been stuttered. The words stuttered in Reading II constitute a random sample of the words read in Reading I, since the same reading passage was used both times.

It is to be concluded from this study, as from two previous investigations (2, 4), that whatever is involved in expectation of stuttering plays an important part in the precipitation of moments of stuttering. Other conclusions follow.

There is a strong tendency for expectation of stuttering to occur with reference to words previously stuttered. It would appear, therefore, that words, or characteristics of words, or stimuli associated with words, can serve as cues which arouse the expectation of stuttering. This is of particular interest in view of the finding of Johnson, Larson and Knott (3) that increased frequency of stuttering can be associated with designated cues.

We see, then, that expectation of stuttering plays an important part in the precipitation of moments of stuttering. We see, also, that expectation of stuttering is precipiated to a significant degree by cues representative of past stuttering. Thus, we may say that a given moment of stuttering is in a fundamental sense a reaction to past moments of stuttering—in accordance with the hypothesis previously formulated by Johnson and Knott (1). It appears, therefore, that stuttering, considered psychologically, is essentially and to a significant degree self-perpetuating. Stuttering is quite as important as a stimulus as it is as a response. The importance of this is suggested by saying that the therapist is hereby presented with the problem of eliminating the stimulus value of stuttering. The degree to which this study has experimentally and quantitatively demonstrated these phenomena would seem to be a genuine advance toward an adequate understanding of stuttering.

The above conclusions are reenforced by the finding that there is a statistically significant tendency for apparently unexpected stuttering to occur on previously stuttered words. This indicates that while definite expectation of stuttering was not reported by the subject, at least some of the words stuttered "unexpectedly" might be suspected of having a psychological value for him different from that of words not previously stuttered. The same might be suspected on the basis of the stutterers' introspections concerning their apparently unexpected moments of stuttering.

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STUDIES IN THE PSYCHOLOGY OF STUTTERING: VI

The Role of Cues Representative of Past Stuttering in the Distribution of Stuttering Moments during Oral Reading[1]

WENDELL JOHNSON AND LUCILE S. MILLSAPPS,
State University of Iowa

This study was made in order to determine whether stuttering necessarily occurs only in relation to certain words, and if not, whether it occurs in relation to a specific cue representative of past stuttering. Previous studies which have led up to this one are listed at the end of this report.

Twenty-six adult stutterers read a standard 180-word passage to the experimenter, who marked all stuttered words on duplicate copies of the passage. The experimenter's observational reliability was .97, as determined by her ability to check phonographically recorded stuttering speech. This method of determining reliability has been described (1).

Each subject read the passage nine times. After the first three readings, all words stuttered up to that point were covered with heavy black pencil markings so that they could not be seen. The subject then read the remaining words, three times. The words stuttered in these three readings were then marked out, and the remaining words were read three times, stuttered words being recorded. Group A, fourteen subjects, stuttered in all readings; Group B, ten subjects, did not stutter after the sixth reading; and Group C, two subjects, did not stutter after the third reading. Data from the three groups were, therefore, treated separately. All subjects, however, gave nine readings.

Failure of Group C to stutter in the second and third reading series, and of Group B to stutter in the third series, is to be evaluated in terms of the fact that these groups contained relatively mild stutterers. Group C stuttered only 2.5 per cent and Group B only 5.2 per cent of the words read in the first series (first three readings). Group A, on the other hand, stuttered 19.4 per cent of the words in the first series, and this group continued to stutter throughout the nine readings.

[1]From the State University of Iowa Speech Clinic, Professor Lee Edward Travis, Director. All data and materials pertinent to this study are on file in the State University of Iowa Speech Clinic.

One way to approach the question as to whether stuttering necessarily occurs only on certain words is to find out how much stuttering occurs after removal of words stuttered.

Group A stuttered a statistically significantly higher proportion of words in the first series of readings than in the second or the third (critical ratios were 6.0 and 8.0, respectively), but this group did not stutter significantly more in the second than in the third series (critical ratio, 2.2). Group B stuttered significantly more in the first series than in the second (critical ratio, 3.8). There was a tendency, therefore, for less stuttering to occur as words being stuttered were removed from the reading passage. This finding, however, cannot be taken literally to mean that stuttering occurs necessarily on certain words. Johnson and Knott (1), as well as Van Riper and Hull (3), have shown that even with reading material remaining intact, less and less stuttering occurs with successive readings: some words stuttered in early readings are not stuttered in later readings. An approximate evaluation of this adaptation effect as far as the present study is concerned can be made as follows. In this study the difference in frequency of stuttering between the first and third reading series for Group A, 14 subjects, was 8.0 times larger than its standard error, as stated above. In the study by Johnson and Knott (1), in which the same passage used in this study was read ten times in succession by each of 14 subjects, the passage not being altered, the difference in frequency of stuttering between the first and the tenth reading was 9.5 times larger than its standard error. It is practically certain, therefore, that this adaptation effect, as well as, and apparently more so than, the removal of stuttered words, contributes to the decrease in frequency of stuttering in later readings in this study.

There is another way to ascertain whether stuttering occurs in relation to certain words, as such, rather than at random, or in relation to cues other than words. Johnson and Knott (1) have shown that there is a marked tendency for the loci of stuttering to be constant from reading to reading of the same material. The same tendency is found in this study. It was possible for each stuttered word to be stuttered three times in each reading series, since each word was read three times. If there had been a purely random distribution of stuttering, each stuttered word would have been stuttered only once, since for no group of subjects were there more stuttering spasms than there were words in the reading passage (180) in any reading series. Therefore, the number of spasms in a reading series divided by the number of specific words stuttered in the series gives a measure of the tendency for stuttering to occur in relation to specific words rather than at random. A chance distribution would yield a quotient of 1.00; perfectly constant loci of stuttering would be represented by a quotient of 3.00. This quotient for the first reading series was 2.0 for Group A, 1.8 for Group B, and 1.9 for Group C. The quotient for the second reading series was 1.8 for Group A and 1.5 for Group B. The quotient for the third reading series was 1.6 for

Group A. The differences between any two of these quotients for any group were not statistically significant. This means that in every reading series there was about the same tendency for stuttering to occur in relation to certain words to the exclusion of other words. Moreover, the differences between these quotients and an assumed chance quotient of 1.00, representative of a purely random distribution of stuttering among the words read, are all statistically significant, with the exception of the second reading series for Group B, and even here the chances are 98 in 100 that the difference is a true one.

Since, therefore, the stuttering that occurs in any reading series tends to be associated with specific words rather than to be randomly distributed, removal of those specific words from the passage should occasion a reduction in stuttering far greater than could be accounted for in terms of the aforementioned adaptation effect, since after their removal the stutterer is required to read only words which he has previously produced without stuttering every time he has attempted them, and he is not required to read words which, for the most part, he has relatively consistently stuttered. That is, stuttering should be thus drastically reduced—or even eliminated—in this case, provided stuttering were due to a disability of the stutterer to negotiate specific phonetic units or sequences, so that stuttering would necessarily occur only on certain words. The same would be true, incidentally, if stuttering were a response conditioned only to specific words. The fact that stuttering continued to occur to the extent that it did in this study after removal of stuttered words militates against acceptance of either of the theories implied in the above statements.

The fact remained, nonetheless, that in any given reading series, stuttering did occur quite consistently on certain words to the exclusion of other words. It was difficult, indeed, to reconcile this fact with the other findings, until an additional type of analysis of the data was made.

Johnson, Larson and Knott (2) have shown that stuttering can be associated with designated cues representative of past stuttering, cues other than words. It seemed desirable, therefore, to examine the present data in order to determine whether any such cues were operating in relation to the stuttering in the second and third reading series. When this examination was made, it was found that significantly more stuttering occurred in the second and third series on words which were adjacent to previously stuttered words (adjacent, therefore, to the pencil blots which were, of course, representative of past stuttering). There were 748 such words in the second reading series for Group A, and 23.0 per cent were stuttered; there were 1093 words which were not adjacent to previously stuttered words, and of these only 4.8 per cent were stuttered. The difference between these two per cents is 10.7 times larger than its standard error. Refining this analysis, for Group A, it was found that 304 words preceded blots, and of these 11.8 per cent were stuttered; 317

words followed blots, and of these 28.7 per cent were stuttered; 127 words were located between blots, and of these 35.4 per cent were stuttered. Group A performed similarly in the third reading series, as did Group B in the second reading series. Thus, it is quite obvious that there was a much greater tendency for stuttering in the second and third series to be associated, rather than not to be associated, with a cue, the blot, representative of past stuttering.

This investigation, then, yielded two important results. First, it indicated quite clearly that stuttering does not necessarily occur only on certain words, as such. Second, it indicated quite as clearly that stuttering does occur with marked consistency in relation to cues representative of past stuttering. A discussion of the theoretical and therapeutical implications of these and other findings from this series of studies will be reserved for a later publication.

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NEWS ITEM

Those who listened to the fascinating paper of our last president, Dr. Lee Travis, dealing with *Brain Waves*, will be interested in a number of others which have recently been given. One by Dr. J. Roy Smith, of Babies Hospital and Columbia University, reporting the results found in the brains of infants, carries one interesting connotation so far as they pertain to the new born, indicating that these waves may be initiated even before birth. Hence that the brain of the unborn child may be active even before birth. He notes that they are slow waves of four to five cycles per second. And says they seem to originate in the so-called motor areas in these new born, and are not the same type as detected in adults. Dr. George Kreezer, of the Vineland Training School, New Jersey, in another paper reported his findings in a study of brain rhythms in mental defectives. He found that differences in brain rhythm accompany wide differences in mental age. Both these papers were given before the Eastern Branch of the American Psychological Association.

Another was given before the recent Memphis Meeting of the F. A. S. for Experimental Biology, by Dr. Hallowell Davis, of Harvard University, a pioneer in the field. He reports them as due to the activity of many cells, generated continuously by the grey matter of the brain and spinal cord. And he summarizes innumerable manifestations thereof, of intensive interest to those engaged in the field of speech disorders.

STUDIES IN THE PSYCHOLOGY OF STUTTERING: VII

Effect of Certain Changes in Speech Pattern upon Frequency of Stuttering[1]

WENDELL JOHNSON AND LEONARD ROSEN,
State University of Iowa

This study was made in an attempt to ascertain whether specific changes in the stutterer's speech pattern would affect changes in frequency of stuttering.

Eighteen adult stutterers served as subjects.[2] Each subject read 7,500 words, employing his customary speech pattern in reading each of three different 500-word passages, and using a prescribed speech pattern, different from his characteristic one, in reading each of twelve different 500-word passages. The fifteen passages were edited in order to make them as nearly similar as possible with respect to reading difficulty.

The speech patterns used, and the order in which they were used by each subject, are given in the left hand column of Table I. In Reading No. 2, the subject was instructed to read at an extraordinarily slow rate, but not to alter his speech otherwise, and a stopwatch was used (as in all readings) to record reading time in order to determine the degree of slowing of the reading rate. The decrease, with reference to Reading No. 1, was marked in all cases, ranging from 11.5 per cent to 188.7 per cent, the median decrease being 45.3 per cent. In Reading No. 3, the subject was instructed to read as fast as he could while maintaining distinct speech. Six subjects read

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[1]From the State University of Iowa Speech Clinic, Professor Lee Edward Travis, Director. All data and materials pertinent to this study are on file in the State University of Iowa Speech Clinic.

[2]An attempt was made to use two other stutterers as subjects, also, but it was necessary to reject them. One subject stuttered so severely that she became exhausted before any given reading passage could be completed. Although generally a rather mild stutterer, her reaction to the experimental situation was so emotionally intense as to render her practically speechless and generally incapable of performing, with the exception that she sang easily and without stuttering [she is a student of music]. The other subject performed so atypically that most of the percentages would have been distorted had his data been included in the tabulation. He spoke English very poorly, since Bohemian was the only language spoken in his home; he seemed quite incapable of adequately varying his speech in accordance with some of the instructions; he was apparently unable to speak with a high pitch. He had the following number of spasms in each reading [the numbers are given in the order of the readings as listed in Table I]: 164, 127, 214, 291, 341, 29, 99, 23, 87, 80, 0, 14, 60, 33, no high pitch, 1, 2.

only 5.4 per cent faster, or less, two even reading more slowly (26.7 and 19.6 per cent, respectively) than in Reading No. 1, in spite of instructions. The median increase in rate was 23.1 per cent, the range being from —26.7 to 88.3 per cent. More stuttering occurred in Reading No. 3 and of course this militated against decrease in reading time.

TABLE I

AMOUNT OF STUTTERING IN EIGHTEEN ADULT STUTTERERS DURING ORDINARY ORAL READING AND WHILE USING EACH OF TWELVE IMPOSED SPEECH PATTERNS IN ORAL READING—WITH STATISTICAL SIGNIFICANCE OF OBTAINED DIFFERENCES

Reading[3]	Words Stuttered, All Subjects No.	Per Cent	$\frac{D}{\sigma \text{ diff.}}$ [4]	No. Subjects Not Stuttering	No. Subjects Stuttering Less Then in Ordinary Reading[5]
No. 1 (Ordinary).....	683	7.6	....	1	....
			11.5		
No. 8 (Ordinary).....	340	3.8	....	1	....
			0.8		
No. 15 (Ordinary).....	316	3.5	....	4	....
Combined 1 and 8.....	1023	5.7	....	0	....
Combined 8 and 15.....	656	3.6	....	1	....
Slow.....	120	1.3	21.1	5	16
Fast.....	697	7.7	6.3[3]	0	3[6]
Whispering.....	72	0.8	25.8	4	17
Low intensity.....	189	2.1	15.7	5	14
High intensity (loud)..	229	2.5	13.3	2	17
Singing.....	0	0.0	....	18	18
Metronome.....	5	0.06	17.8	15	18
Arm-swing.....	1	0.01	18.2	17	18
Sing-song.....	8	0.09	17.6	15	18
High-pitch.....	95	1.1	11.1	10	18
Chorus-Stutterer.....	1	0.01	18.2	17	18
Chorus-normal.....	1	0.01	18.2	17	18

The instructions for the other readings were all carried out satisfactorily by the subjects, according to judgments based on careful observation. There were occasional slips, of course, but

[3]In each of the 15 readings each subject read 500 words, a total of 9,000 words, and a grand total of 135,000 words.

[4]Data from Readings 2 to 7 inclusive are compared with data from Readings 1 and 8 combined; data from Readings 9 to 14 inclusive are compared with data from Readings 8 and 15 combined.

[5]More stuttering than in ordinary reading.

[6]One subject stuttered the same and 14 stuttered more than in ordinary reading.

apparently these had no appreciable effect on the amount of stuttering that occurred; if there was any effect it was that the slips in adhering to a given pattern resulted in very slightly more stuttering than would have occurred otherwise. For the singing experiment, simple songs (500 words in all) were sung by the subject, with piano and violin accompaniment. For this purpose, special phonograph records were made in the Iowa Psychological Laboratory. "Metronome" refers to reading in time to a metronome beat, of such a rate that the reading was, on the average, 59.1 per cent slower than the ordinary rate as recorded in Reading No. 8. "Arm-swing" refers to reading in time to the voluntary and regular swinging of the subject's arm; he spoke one syllable each time he swung the arm. "Sing-song" refers to reading with alternating high and low intensity, loud voice on one syllable and low on the next. In the "chorus-stutterer" reading, the subject read in chorus with another stutterer, the same stutterer, Subject No. 1, serving as the partner for each subject, except himself. The senior author served as partner for Subject No. 1. In the "chorus-normal" reading, the subject read in chorus with a normal speaker, seven different normal speakers serving as partners for the various stutterers.

In all readings the experimenter drew a line through each word stuttered. The experimenter's observational reliability was 95.8, as determined on the basis of his repeated checking of phonographically recorded stuttering speech, a method which has been described (7).

As indicated in Table I, the subject read in his ordinary way in Readings No. 1, 8, and 15. The adaptation effect (the tendency for less and less stuttering to occur with repeated readings), described in previous studies (2, 3, 8), was operating in this study also, at least with regard to the ordinary readings, and had to be taken into account. The extent of the adaptation effect is shown by the fact that the difference in frequency of stuttering between Reading No. 1 and Reading No. 8, was 11.5 times larger than its standard error. This agrees essentially with the findings of Johnson and Knott (2) and Johnson and Millsapps (3), and thus it indicates that in this respect the stutterers' performances in the present study were essentially typical. From the eighth to the fifteenth reading there was apparently little further adaptation, since the difference in frequency of stuttering between these readings is only 0.8 times larger than its standard error. Frequency of stuttering in readings between the first and the eighth was compared with the combined or average frequency of stuttering in the first and eighth readings, in order to allow for the adaptation effect. For the same reason, readings between the eighth and fifteenth were compared with the combined data from the eighth and fifteenth readings. The critical ratios in column four of Table I are to be interpreted accordingly, as are the numbers given in the sixth column.

When the twelve prescribed patterns were used, significantly less stuttering occurred, with the exception that when the subjects

read fast significantly more stuttering occurred than when they read in their ordinary patterns. This latter result is particularly interesting for the reason that, as a matter of fact, with instructions to read fast the median increase in rate was only 23.1 per cent. Two subjects actually read more slowly (26.7 and 19.6 per cent, respectively) than in Reading No. 1; one of these nevertheless stuttered over 100 per cent more frequently under instructions to read fast. Six, or one-third, of the subjects read only 5.4 per cent faster or less. It would appear that the mere attempt or intention to read fast, as well as any actual increase in rate, played a part in determining the amount of stuttering in this reading.

With six of the patterns practically no stuttering occurred: singing, metronome, arm-swing, sing-song, reading in chorus with another stutterer, and reading in chorus with a non-stutterer. The next most effective pattern in reducing stuttering was whispering, then high pitch, and next followed in order, slow, low intensity, and high intensity. In all patterns, except "fast," practically all the subjects, considered individually, stuttered less than in their ordinary reading. It will be noted that the greatest reduction in stuttering is occasioned by alteration of the speech pattern in accordance with some imposed and very definite rhythm (reading in chorus with another person is to be included here, of course).

In viewing these findings from a neurophysiological point of view, one is prompted to point out that increased speed of speech was accompanied by increased stuttering, and vice versa. This might be taken to mean that the stutterer possesses a neuromuscular speech mechanism too unstable to withstand the strain of rapid performance.[7] Also, from the neurophysiological point of view one might assume that the marked decrease in stuttering when a strong rhythm patterns were used was due perhaps to the integrating influence on the speech mechanism exerted by the imposed rhythm. Such an assumption would have to be established, of course, by means of research of a type different from the present study.

From a psychological point of view one is tempted to think first of distraction and suggestion as the important factors affected by alteration of speech pattern. These terms have been used in an extremely loose manner in connection with stuttering. As a matter of fact, it seems most reasonable, on the basis of various studies [1, 4, 5, 6], to assume that variation in distraction and suggestion in connection with stuttering means essentially variation in the degree to which stuttering is expected, with concomitant variation in the degree to which the stutterer indulges in avoidance reactions. It seems rather obvious that a stutterer, in attempting to execute a prescribed and somewhat unusual alteration in his speech pattern, would find his attention distracted somewhat from the expectation of stuttering. The stimulus value of words and other cues [3, 7], as

[7] Final conclusions on this point should be delayed perhaps until a study is done in which the speaking rate is stepped up much more than was done in the present investigation.

such, would necessarily be changed as the stutterer's attention was being engaged by rhythm or rate, pitch or intensity, as such. In Gestalt terms, the field is altered. If, for these reasons, the stutterer less frequently and definitely expects to stutter, he will less frequently and definitely react with hesitation and strain to such expectation, and his speech will, therefore, be more fluent.

Other explanations might also be considered. Certainly anyone who can advance an adequate interpretation of such drastic variations in amount of stuttering as were effected in this study will thereby advance a quite adequate theory of stuttering in general.

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(7) JOHNSON, W., LARSON, R., AND KNOTT, J. R. Studies in the Psychology of Stuttering: III. Certain Objective Cues Related to Precipitation of Moments of Stuttering. Journal of Speech Disorders, March, 1937, 23–25.

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NEWS ITEM

Dr. H. L. Shipiro, of the American Museum of Natural History, presented a paper at the Cambridge meeting of American Association of Physical Anthropologists, which reported an extensive study of considerable interest to those concerned with disorders of speech and hearing which are hereditary. In brief it shows that the 202 persons on Pitcairn Island, offspring of the original six mutineers of the ship *Bounty*, who settled on the island in 1790 with twelve Tahitian women, present an ideal group for the study of the effect of close inbreeding over a long period of time. Yet careful examination shows them to be "healthy, vigorous, and free from stigmata of degeneracy."

OUR NEXT CONVENTION

IN

CHICAGO, OCTOBER 10–15, 1937

WITH AMERICAN ACADEMY OF OPHTHALMOLOGY AND OTO-LARYNGOLOGY

CALL FOR PAPERS AND ABSTRACTS DUE BEFORE JULY 1

In a conference with Dr. Lee Wallace Dean, President and Dr. Wm. P. Wherry, General Secretary, of the American Academy of Ophthalmology and Oto-Laryngology, a joint meeting with our American Speech Correction Association has been arranged and was approved by vote of our council.

Their Annual Meeting will be held October 10–15, 1937, at the Palmer House, Chicago. They will reserve for us one entire evening (Tuesday, October 12) for a joint session.

On Monday, October 10, the Academy has arranged a Symposium on Physio-Therapy as it applies to our various Specialties in Medicine and Pedagogy. Prominent Physio-Therapists have been invited to participate in this program. Our proposed contribution to this Symposium would be:

SYMPOSIUM ON PHYSIO–THERAPY:

Speech Spasticity.....MISS MILDRED A. MCGINNIS
Central Institute for the Deaf, St. Louis

The Speech of the Deaf Child...DR. MAX A. GOLDSTEIN
Central Institute for the Deaf, St. Louis

(To be shown in Sound-Films)

The Academy has a membership of over a thousand and they have reserved the Palmer House for accommodations for their members. We could select the Hotel Stevens or any other hotel that our local Chairman of Arrangements may choose. Dr. Meyer Solomon will fill that position and take charge of all local arrangements.

The Program Committee will consist of Dr. G. Oscar Russell, chairman, Dr. Bryng Bryngelson and Miss Mildred A. McGinnis.

This notice will function as a call for any papers you may desire to present in our other sessions on October 11, 12, and 13, 1937. Titles and an abstract of not more than 200 words should be in the hands of the chairman and editor of this Journal before July 1, 1937. So mail them immediately to DR. G. OSCAR RUSSELL, Ohio State University, Columbus, Ohio.

MAX A. GOLDSTEIN, M. D., *President.*

THE THERAPEUTIC VALUE OF CEREBRAL DOMINANCE IN TREATMENT OF THE SPEECH OF SPASTICS

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From a number of years experience with the physically normal children in the city of Minneapolis, and as speech clinician at the Dowling Public School for Crippled Children, during which I have handled about seventy-five cases diagnosed as "spastic" (cerebral palsy), the following facts have apparently been established:

1. In some cases articulatory (dysarthria) defects have improved or cleared as general physical co-ordination has improved.
2. In some cases of articulatory (dysarthria) defects have improved or cleared though the general physical co-ordination has apparently not improved to any extent.
3. In some cases of articulatory (dysarthria) defects have not improved to any extent, though the physical condition improved materially.
4. In some cases stuttering has increased when emphasis in physical treatment has been placed upon the crippled hand.
5. In some cases stuttering has decreased when emphasis has been placed upon the crippled hand.

These opposite resultants may perhaps be explained by the fact that a dominant gradient of excitation of sufficient potency and complexity to operate the muscles for speech has not been established, and in the dysarthria cases a correct pattern of the sounds involved has not been accurately pictured in the brain.

I am presenting in this paper three cases of spastic stutterers which throw some light upon this subject. One case is diagnosed as right hemiplegia, one as paraplegia, one as diplegia.

By Right Hemiplegia is meant a crippled condition of the right side of the body due to a brain lesion.

Paraplegia indicates a crippled condition of legs and lower part of the body. Both motion and sensation are affected.

Diplegia produces a like condition of parts on either side of the body. Usually the entire musculature is involved.

While there are many methods employed in an effort to cure stuttering, what actually happens is the same in every case. "A

dominant gradient of excitation of sufficient potency and complexity to integrate the bilateral structure used for speech has been set up in one cerebral hemisphere, and speech has thus been raised from the low involuntary level to the higher level of voluntary cortical control."[1] Besides the employment of the writing and speaking exercises, there is the use of mental hygiene which aims to iron out poor attitudes and socialize the stutterer. Still another technic is the voluntary stutter. This is, as the name implies, a raising of involuntary low level control of speech to the voluntary, high cortical level of control.

Spastic paralysis rises from lesions of the premotor projection areas of the cortex. This area, lying anterior to the motor area, is generally referred to as the "intermediate precentral" region. Through its own corticospinal tracts or through its subcortical connections it mediates voluntary reactions. When lesions of the upper motor neuron affect pyramidal and nonpyramidal components they are more complex, since subcortical as well as cortical motor projection systems are involved. Fulton and Fiets[2] found that with premotor (non-pyramidal) lesions "there were profound vasomotor disturbances, no wasting and a high degree of spasticity. In combination of the two motor and premotor, there is strong spasticity, exaggerated reflexes, and vasomotor disturbances. These are highly premotor, non-pyramidal effects."

There are many causes of cerebral birth injury. An intracranial hemorrhage may occur in normal delivery, in precipitate delivery, delivery by instruments, or in Caesarian sections. Toxemias, diseases of the fetus, hemorrhagic diseases of the new-born, are also among the causes. The birth injury disturbances are referred to as Little's Disease, Athetosis, or Spastic Paralysis. They are not a true paralysis in that there is no loss of motion or sensation in the living member. Rigidity results from certain muscle groups becoming stronger than the opposing ones. Movements are exaggerated. Usually the mentality of the patient is normal. Training, as in the case of the normal person in acquiring skills, requires repetition for co-ordinated movement to become automatic.

Jim—Paraplegia

In paraplegia there is leg and lower body involvement. Jim walked with some difficulty and frequent falls. His stutter was not apparent until he reached 1B and was about seven years old. A severe case of disordered articulation was present, however, since the onset of speech at about one year of age. He seemed to prefer his left hand from a very early age. The parents, particularly the father, were of the opinion that he would be more successful in life if he were right handed. So they insisted that Jim use his right

[1] "Treatment of Stuttering," Journal of Expression, 5-9-26, Bryngelson.

[2] "Upper Motor Neuron Lesions," Physiotherapy Review, Vol. 15, No. 3, 1935. Fulton and Viets.

hand. After one year of school, with this training being carried over into the school, a stutter appeared. The child rapidly became a behavior problem. Irritability, apprehension, and emotional insecurity were very apparent. During this period the child had been receiving auditory and visual stimulation for the articulatory disorder. The auditory stimulation was on the right side, i. e., through the right ear. Slight improvement was observable.

As soon as the stutter was discovered, a more complete history was taken. This revealed the early left sidedness. Then a series of cerebral dominance tests of an informal nature were given. In these tests, a preponderance of activities utilized the left hand lead. The recommendation was made to develop the left side. It was not until well into the next school year that complete co-operation was brought about between all the individuals involved in the problem.

The child found the change a little difficult at first. But soon he was very enthusiastic about reading and writing, which were being carried on as part of the speech therapy. Many times he pleaded for longer periods of work. By spring, one year after the shift back to the left side, he was quite left sided, although he still needed occasional reminding in his eating and some other activities. By one and a half years after the shift back to the left side, the stutter had disappeared and there has been no reappearance in the three years which have since elapsed.

John—Right Hemiplegia

With his right side paralyzed, it is quite obvious that John would use his left side. The right hand was carried in the rather characteristic position of spastics—forearm up and close to the body, hand drooped from the wrist. The right leg dragged slightly.

There had been no effort at speech before one year. The stutter was first noticed at one and one-half years as very slight. There was a history of hemorrhaging from the naval at a very early age, necessitating blood transfusions. At three years of age, the stutter had markedly increased. A fall at this age was so severe that the child was rendered unconscious for several hours. Just what part that played is not clear for the placing of the accident in point of time and in relation to the increased stutter is indefinite. Further the parents did not recall what portion of the body received the brunt of the fall.

The child was about eight years of age when he came to school and was admitted to speech class. He was a scowling, suspicious, negative, untrustworthy, dependent, restless, attention-seeking child.

Following a careful study of the case, work was begun to establish, if possible, a center of neurological dominance for speech on the left side of the brain. A program for establishment of healthy mental attitudes was adopted simultaneously. Writing and throwing were the first of the activities to be used. Every legitimate opportunity

to praise was utilized. Gradually the desire to be trusted and dependable was instilled. The child's room teacher was indefatigable in her efforts to foster these same ideals. The gymnasium teacher and the physiotherapist were equally tireless in their efforts to help train the crippled right side. After four and one-half months the child adopted "I can" as his slogan.

At the end of sixteen months, the teacher reported a cessation of the stuttering. This condition continued through the remaining three months of the school year. There have been repeated cessations following intensive work on the right, crippled hand, and repeated reappearances of the stutter following vacations during which, the child reports, he used his left hand. Each reappearance is milder than the preceding one, however. The stutter is disappearing. Four and three-fourths years after starting this treatment it is so mild as to be scarcely noticeable. Accompanying this decided improvement in the speech is an increase in the ability to adjust to life.

Jerry—Diplegia

His entire body was involved in the spastic condition but Jerry could walk with the aid of crutches. The history indicated the stuttering onset as at the beginning of speech. But the mother could not remember the age at which the child began talking. The left side was less paralyzed, so after feeble efforts to make the child right handed, the left was allowed to take the lead. When speech training was begun with the child, he was nine and one-half years old. During the first year, the principal therapy was relaxation, breathing, rhythmic exercises, some of them bilateral in nature, and some exercises of the speech muscles. In the spring, when he was about ten years of age, he said he'd like to practise using the right hand. But there wasn't enough evidence in history or activity tests to warrant starting that training as part of the speech program.

The technique of voluntary stuttering was introduced to him the next fall. It was difficult for him to begin using "voluntary," because his spasms were so extremely severe. His persistence carried him through, however. So that after four years of intermittent use, he is fairly proficient with this technique.

When he was eleven, the occupational therapist found that he was stronger and much more accurate in his manual work with his right hand. It was impossible for him to use his right for writing, however. Bilateral work was used in an effort to start the right hand going. Before the end of three months the right hand was being used alone. Games and other devices were used for the development of the larger musculature. By the end of the school year, after about four and one-half months of treatment, the writing was legible though the lines were wavy. An interesting notation accompanies the October progress sheet of the following school year. The quote is verbatim: "child is very free from stutter early in September. In October worse than at any time in two years.

Out of school had returned to left hand." In school the training continued on the right side. The November chart indicates improvement. In January, there is again "slight increase in stutter upon return after vacation." In February he was unimproved. In April the promised co-operation, partially maintained so far, broke down completely. In the face of active non-academic opposition, however, Jerry agreed to try the right hand unreservedly for a year.

The lack of co-operation previously mentioned was very apparent the next year. Steadily, however, he gained. To date he is greatly improved in his speech. This improvement is apparent both in school, and, according to the parents, outside of school. His hands are still unsteady. But he has been able to reduce the size of his writing from three inches in height to the regulation for his grade without a strain on him, and still have his work acceptable to his teacher. Recently, Jerry's teacher remarked that his oral recitations showed great improvement. Surely, though slowly, he seems to be making progress.

In handling cases of stuttering spastics, it frequently seems to be a question of whether the crippled hand should be trained and any resulting speech disorders ignored, or whether normal speech should be the goal and the crippled hand receive little or no remedial work if the speech disorder is aggravated by the treatment given. Sometimes it seems to be a question of whether or not enough margin of dominance can be established by intensive use of the normal and apparently dominant hand to offset the use in therapeutic measures of the crippled and apparently non-dominant hand. Only after careful intensive study of each case including co-operation possibilities, and a weighing of the comparative value of these two skills—better speech vs. better use of crippled hand—should any recommendation be made.

NEWS ITEMS

Dr. Karl S. Lashley, professor of psychology at Harvard University, gave the second Huglings Jackson Lecture of the Montreal Neurological Institute on April 14, 1937. Title: *Factors Limiting Improvement after Central Nervous Injuries.*

Three lectures on *Foundations of the Personality Structure, The Developing and Emerging Personality,* and *Personality in Widening Human Relationships,* were presented before the New York Academy of Medicine on April 9, 16, and 23, 1937. They were the fifth series of the Thomas William Salmon Memorial lectures, and were given by Dr. William Healy, director of the Judge Baker Guidance Center, Boston.

-:- REVIEWS -:-

By CHARLES H. VOELKER
Director, Dartmouth College Speech Clinic

SPEECH FOR THE CLASSROOM TEACHER. By D. I. MULGRAVE (Assistant Professor of Education, New York University). New York: Prentice Hall, Inc., pp. xxiv, 398, 1936. $2.50.

This book has many speech exercises and extensive bibliographies of recent works. Part I of the book analyses the teachers' speech problems, Part II is on *Mechanical Aspects of Speech*, Part III, *Phonetic Aspects of Speech*, Part IV, *Artistic Aspects*, and Part V, *Pathological Aspects of Speech*. Part V discusses especially three divisions of disordered speech, functional, organic, and emotional. The book would make a good text for the first course in speech for the beginning speech pathologist.

SIMULTANEOUSLY RECORDED BREATHING AND VOCAL DISTURBANCES OF STUTTERERS. HENRIKSON, E. H. (University of Iowa). Iowa City: Archives of Speech, 1: 133–149 (March) 1936.

"The records of the propositional speech of stutterers showed, during stuttering, a marked absence of organized interactivity between the functioning of the breathing and voice-producing mechanism. Marked irregularities noted were: (1) a variety of attempts to speak on inhalation, with high frequency oscillations, regular waves, irregular waves, or periods of no recorded sound in the accompanying voice record; (2) tonal rigidity and tonal fixation, both requiring a steady exhalation; (3) tonic spasms in the breathing mechanism with some high frequency oscillations evident in the voice record and tonic stuttering, which accompanied a variety of conditions in the functioning of the breathing mechanism; (4) clonic spasms in the breathing curves, appearing alone or with some other breathing dysfunctioning, which were correlated with a variety of vocal manifestations, and clonic stuttering, produced with or without clonic spasms in the breathing mechanism; (5) breathing antagonisms of varied types and not specifically related to the multiform vocal records coexisting with them; (6) bizarre voice variations evident during any breathing relationship which was capable of producing photographically indicated vocal activity."

A STUDY OF THE HORIZONTAL DYSINTEGRATION OF BREATHING DURING STUTTERING. TRAVIS, VERA (University of Iowa). Iowa City: Archives of Speech, 1: 157–169 (June) 1936.

"Breathing records of normal speech for both stutterers and normal speakers showed the breathing movements of one side of the abdominal breathing mechanism to be practically identical with those of the other side with respect to rate, extent, and general

patterning. . . . The two sides of the stutterer's abdominal breathing mechanism do not function as a unit during stuttering, one not necessarily functioning in harmony with the other side," in the following forms of dysintegration: "(1) striking differences between the right and left sides in the amount of movement in both inspiration and expiration; (2) striking differences in the number of movements. both respiratory and expiratory, between right and left sides; (3) strikingly different patterns for the two sides; (4) asynchronization; (5) opposition of movement of the two sides; (6) a relative lack of movement on one side; (7) small superimposed movements occurring at a rate of from 5 to 10 per second on one side only."

SPEECH CORRECTION MANUAL. BENDER, J. F. AND KLEINFIELD, V. M. (College of the City of New York). New York: Farrar & Rinehart, pp. xiv+266, 1936. $2.50.

This is a practical book containing 317 drills for speech and voice improvement and its validity as drill material has been tested upon "many hundreds of young men with disfigured speech" at City College. The book is not planned to offer treatment material for such types as dysphasia or uraniscolalia but "is recommended for the assistance of those who are clumsy or embarrassed or are in other ways inadequate in their use of approximately normal organs of speech and voice." The authors say, "It is hoped that these materials may be found useful (1) by those who are interested in improving their articulation generally; (2) by the teacher who has had no great amount of experience in teaching speech correction; (3) by the high school and college speech student working alone or with little supervision; (4) by the physician who has need of a handbook of drills and ready references. The general point of view presented is speech correction by re-educational methods. Those procedures which allow for economy of time have been emphasized. The drills and recommended corrective programs provide for periodic measurements of progress. Only a modicum of theory is presented, just enough to provide the mature student and teacher with a rationale of speech correction." PART I, *Breaking in New Speech Habits*, and PART III, *Notes and Useful Hints on the Drill Materials*, are quite short, giving way for a mass of material for PART II, *Practical Drills for Speech and Voice Improvement*. Before reviewing this book, I have used it in the Dartmouth College Speech Clinic, and found it to be a very usable and valuable source of pertinent materials.

A STUDY OF FACTORS CONTRIBUTING TO THE MALDEVELOPMENT OF THE SPEECH PERSONALITY. MURRAY, E. (University of Denver). Ann Arbor: Speech Monographs, 3: 95–108, 1936.

"The concept of Adler that recognition and approval is a main determining factor in the development of the personality (individual psychology) appears especially applicable to speech behavior. The

large number of cases in the present study wherein the child appeared as a failure in speech situations and in unfavorable light in other situations, particularly before groups or individuals whose recognition he especially desired, shows the great importance of permitting him to have adequate opportunities for gaining such group or individual approval. Properly directed speech training affords these opportunities in a most direct way." This paper contributes to prophylaxis of speech disorders.

SPEECH HANDICAPS OF STUDENTS IN PURDUE UNIVERSITY: THE GENERAL PROBLEM AND THE PROGRAM OF CORRECTIONAL SERVICES. STEER, M. D. AND TRIMBLE, O. C. (Purdue University). Lafayette, Ind.: Purdue University Studies in Higher Education No. 28, pp. 27, 1936. $ .30.

This brochure describes the organization of the speech clinic at Purdue University, its detection of disordered speech and its facilities for the treatment of speech defectives. It describes the 1935 survey of speech as a part of the physical and medical examination, wherein 22.5% of the men and 28.0% of the women were found to be defective. The authors indicate that the theoretical expectancy of defective speech at such a technical school as Purdue University is large, being in the neighborhood of 20%, in comparison to liberal arts colleges where the expectancy is theoretically around 10%.

PROPHYLACTIC TECHNIC FOR SPASMOPHEMIA IN MONGOLS. VOELKER, C. H. (Dartmouth College). Menasha, Wis.: The American Journal of Orthopsychiatry, 6: 440–441 (July) 1936.

"Although primary spasmophemia might be considered a part of their mental and physical make-up, it can be eradicated by diagnostic speech re-education. . . . On the other hand, the prevalence of spasmophemia in dyslogia mongolia would seem to reflect upon the nature of spasmophemia itself."

PSYCHIATRY AND DISORDERS OF SPEECH. DORSEY, J. M. (State Psychiatric Hospital, Ann Arbor, Mich.). Iowa City: Archives of Speech, 1: 9–17 (March) 1936.

"Mental disease, disorder of the person, occurs at the level of interaction between the individual and the group. Thus, we can consistently trace the conflicts of the sick person to these ambivalent forces as represented either in something the group wants the individual to do that he does not wish to do, or in something the individual wants to do that the group opposes. Of just such dynamics are both well and sick persons constituted. It is the essential function of the person to organize a working equilibrium of these conflicting forces for the purpose of 'carrying on' in the life situation. Mental hygiene knows no more fundamental doctrine."

AUDIOMETRY AND THE PRESCRIBING OF HEARING AIDS. JONES, I. H. AND KNUDSEN, V. O. (Los Angeles). St. Louis: The Laryngoscope, 46: 523–536 (July), 1936.

"In prescribing a hearing aid, the following questions arise: (1) Should a hearing aid be prescribed at all? . . . (2) Should the patient have an air conduction or a bone conduction type of instrument? . . . (4) Should a special high-quality hearing set be recommended? . . . (5) Should selective amplification be recommended?"

THE RELATIONSHIP OF INTELLECT TO SPEECH DEFECT IN APHASIC PATIENTS. By KENNEDY, F. AND WOLF, A. (Bellevue Hospital, New York). Richmond: Journal of Nervous and Mental Disease, 84: 125–145, 293–311 (Aug. and Sept.), 1936.

"Although thought processes are frequently afflicted in aphasics, especially with large lesions, it is not more fitting to regard 'mind' and speech as one than it is to expect every moron to be aphasic. . . . We have tried to build a concept of localization in speech disorders, the construction of which is secure and well-rooted in the disciplined idiom of organic neurology and away from what amounts to the mysticism of some modern schools. To us the idea of centralization of speech function has been an aid in physiology and diagnosis, while our distinction between symbols and intellect has given us a respect and sympathy for the aphasic mind that may lead to greater understanding."

WHAT THE TEACHER OF HANDICAPPED CHILDREN LEARNS THAT ALL TEACHERS SHOULD KNOW. GOLDSTEIN, M. A. (Central Institute for the Deaf, St. Louis). Ann Arbor: The Quarterly Journal of Speech, 22: 51–56 (Feb.), 1936.

"To understand normalcy we must recognize the abnormal. . . . To recognize and serve efficiently the educational needs of the normal child, the teacher must have a practical knowledge of the most prevalent physical and mental handicaps by which so many children are affected. . . . The science of speech pathology and teachers especially qualified to correct defects in speech constitute another contribution for the teacher of the normal child. This is numerically the largest group of handicapped children in the nation. . . . 4,000,000 speech defectives, . . . of 7,681,000 handicapped children of school age in the United States today . . . of the total enrollment of 50,000,000."

FOR STUTTERERS. By S. BLANTON (Cornell University Medical College) and M. G. BLANTON. New York: D. Appleton-Century Co., pp. xi and 191, 1936. $2.00.

This book is intended "for those people with the symptom called stuttering, whom we feel to have been too long neglected," although there is material helpful to parents, teachers, and physicians. "The mature stutterer will be the first to agree that the fear and the

emotional anxiety are the great causative factors in this disorder. It remains for each individual to find out what in his own emotional life has caused the anxiety or the fear. . . . For the limited few who have both the time and funds for prolonged treatment, psychoanalysis . . . is indicated though not for all stutterers by any means, nor is it necessary for all. . . . Individual guidance work . . . may be accomplished by conferences with the physician or psychotherapist while remaining under the usual living conditions or, over a brief period of intensive treatment with living conditions entirely modified." Clinicians will find this book quite helpful, and a valuable contribution.

THE PSYCHOLOGY OF LANGUAGE WITH SPECIAL REFERENCE TO THE DEAF. GROFF, M. L. (Minneapolis). Washington: American Annals of the Deaf, 81: 113–125 (March), 1936.

This is a continuation of the paper in the same journal for March, 1935, pp. 172–178. Groff criticizes teachers of the deaf for their emphasis on articulation: the child is usually not allowed to speak a word until he can lip-read it perfectly. Articulation becomes a vocal habit but the proper associations have not been provided for these vocal habits to become language habits.

EMOTIONAL FACTORS IN THE ETIOLOGY OF STAMMERING. KROUT, M. H. (Chicago City Junior Colleges). Princeton: Journal of Abnormal and Social Psychology, 31: 174–181 (July-Sept.), 1936.

Study of three cases at college level showed: pre-school age conflicts, infantile strivings tabooed and repressed, intense emotional attitudes toward parents, traumatic inhibitions with reference to processes of elimination, and active or passive homosexuality. Krout recommends a therapy of "passive analysis, relying on transferance as its major aid" to remove pre-genital fixations on the oral and anal levels.

SPEECH DEFECT (WORD MUTILATION) AND MASOCHISM IN A TRAUMATIC NEUROSIS. PEARSON, G. H. J. (Temple University). Albany: Psychoanalytic Review, 23: 46–58 (Jan.), 1936.

Case report: a phonetic defect in a five year old male seemed to date from his falling and cutting his tongue at 18 months, following which, he ceased to talk until two and one-half years. At the examination at five years of age his speech apparatus was normal but the speech defect had been present since he again started to talk. The psychoanalytic treatment is described in the discussion. The etiology is explained. "This disruption, organic and intrapsychic, removed any pleasure from the act of speaking—in fact, the pleasure was perhaps replaced by a fear of pain if he spoke, and the child ceased to speak at all for about a year. The trauma occurred at the period when the oral zone was one of the major outlets for all his

aggressive desires. . . . The child learned that the use of oral mastery would result in pain. . . . The aggression became diffused." Since other avenues were not easily available it became a danger from which "he must defend himself by inhibitions and by masochistically turning it upon himself."

IS STUTTERING ABNORMAL? WEST, R. (University of Wisconsin). Princeton: Journal of Abnormal and Social Psychology, 31: 76–86 (April-June), 1936.

"It should not be thought that all stutterers exhibit all of these symptoms of constitutional differences from the average. It is as though we had four groups of atypicals: (1) the left-handers; (2) those having slow diadochokinesis; (3) those having a low serum protein and certain other related biochemical differences, and (4) stutterers. These groups tend to overlap; especially does the stuttering group overlap the others." Stuttering is a "condition of the physiologic organism in which the muscular system, though in no way disturbed in the basic functions, yet is disabled in the acquired functions of speech. . . . Speech itself is an unnatural function, at least, for a considerable group of humans, mostly males, whose condition may be described not as pathological, but as dysphemic."

A STUDY IN THE ANALYSIS AND CORRECTION OF THE SPEECH OF THE HARD OF HEARING. SHAW, M. O. M. (University of Iowa). Washington: American Annals of the Deaf, 81: 255–268 (May), 1936.

This describes in detail an experiment in speech correction on ten hard of hearing subjects using a high fidelity amplifier that made it possible for the subjects to hear all the speech sounds. Eight showed development of spontaneous speech and enlarged speaking vocabulary. The improvement or lack of improvement is noted for each case.

AN OBJECTIVE STUDY OF THE RELATIONSHIP BETWEEN PSYCHOLOGICAL FACTORS AND THE SEVERITY OF STUTTERING. STEER, M. D. AND JOHNSON, W. (University of Iowa). Princeton: Journal of Abnormal and Social Psychology, 31: 36–46 (April-June), 1936.

"Stutterers experience a measureably greater amount of stuttering in some types of speech situations than in others, . . . stutterers experience relatively more difficulty in situations in which the audience is relatively large and consists to a high degree of persons with whom the stutterer is unacquainted. . . . The following subjective factors may be significantly related to changes in severity of stuttering: (1) general emotionality; (2) desire to keep from stuttering; (3) embarrassment; (4) awareness of real or imagined embarrassment on the part of the audience; and (5) effort and muscular strain." These factors are not intended to be all-inclusive.

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(*To be continued*)

Special Privileges for the Few at the Expense of the Many

Certain of our university professors still imbued with the old English and continental aristocratic tradition, continue to advocate that our universities be operated solely for the benefit of the intellectual elite. Indeed many would go farther and eliminate even such a brilliant mind as that of Thomas A. Edison, merely because he was very hard of hearing. They would insist that the university can not be expected to so adjust its instructional program as to permit an individual of that type to profit thereby. Likewise a Kingsley or Demosthenes, with stuttering speech so bad as to lead to sure failure in that cut-and-dried recitation system now firmly embedded in our massive machine-like university system. They would object to making the need of the student the paramount consideration. He must fit the system, rather than adjust any part of the system to fit him and others of like need. In other words the plant is permitted to wilt or gradually pine away; in their view it must adapt to the soil or die; that the soil should be modified to serve the plant is incredible; if the plant cannot adapt they say it should have never been planted; and it never occurs to them that not only is there in this case no other place to plant it, but its products are furthermore badly needed. Professors with this administrative philosophy are common even in state universities, dependent for support on the taxes collected from all, including the very ones they would deny these higher educational facilities.

Thoughtful non-academic, far-seeing citizens have almost to a man, however, opposed such restricted professional views. For the average citizen of vision insists on universal education. In this broader, more humane, and more democratic view, every individual is entitled to the best education he is capable of absorbing. That is the only excuse for establishing the state, or any other taxation supported university. So, deep down in the soul of the far-seeing there is a firmly grounded conviction that the medieval concept of special privileges for a handful of the elite at the expense of the mass, is not only wrong but a social crime.

All should have the same privileges if there is any human way possible to so present them that the individual can profit thereby. For if he profits so does the state, or the social group. We rise together. If one is visually minded and requires instruction by such channels rather than the auditory, is he not entitled to it? Or if the auditory channel is impaired through the exigencies of life, and that difference in his intellectual equipment can be made up by the university through the offering of a few courses, is he not entitled to that consideration?